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LUMBO-DORSAL SYMPATHECTOMY IN SEVERE HYPERTENSION

AN INTERIM SURVEY

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[WITH PHOTOGRAVURE PLATE]

The treatment of hypertension by resection of the dorso-lumbar sympathetic nervous system has been practised for many years in the United States, where there is already an extensive literature on the subject. This literature has been reviewed elsewhere (Blodgett and Cutler, 1947; Bassett, 1948). It is only recently, however, that this treatment has attracted any great interest in this country. It might be helpful, therefore, to review a series of consecutive cases operated on at Westminster Hospital. The number—24 cases—is not large, and any conclusions can be only of a tentative nature. However, all these cases had been fully investigated before operation and have been carefully observed since, and an idea of the value of this form of treatment has begun to emerge.

Analysis of Material.—Of the 24 patients 15 were men, and of the nine women seven were married and two single. The youngest patient was a girl of 17, and the oldest a man of 60. The average age of the group was 42 years. There was no appreciable difference in age at operation between the men and the women. Six of the patients were over 50. The age incidence in decades was as follows: Under 20 years, 1 case; 20–29, 2 cases; 30–39, 4 cases; 40–49, 11 cases; 50–59, 5 cases; 60 years, 1 case.

Diagnosis

In five cases there seemed to be a cause for the hypertension: three patients had chronic nephritis, one patient had calculi in both kidneys, and the fifth, a married woman aged 47, had suffered from eclampsia 28 years previously. One patient with renal hypertension, a man aged 53 who had a clear history of acute nephritis at the age of 23, stated that his father and brother had both died from a "stroke." In this case the chronic nephritis had entered a malignant phase, and the familial tendency to high blood pressure had probably accentuated the disease. In the other 19 cases, in spite of careful interrogation and investigation, the origin of the hypertension was obscure, except that nine had a family history of hypertensive cardiovascular disease, suggesting that they might be cases of essential hypertension. However, when the records of these 19 patients were viewed as a whole an impression was gained that many were cases of chronic renal disease rather than essential hypertension.

Malignant Hypertension.—There were six cases of malignant hypertension in this series—four primary and two secondary. The following criteria were used in making the diagnosis: (1) The presence of papilloedema with or without oedema of the surrounding retina—all six cases; (2) necrosis of the glomeruli or afferent arterioles on renal biopsy or at necropsy—five cases; (3) gross impairment of renal function—three cases; and (4) cerebrospinal fluid pressure greater than 300 mm. of water—two cases. Malignant hypertension may be a primary disease in a previously healthy person, or it may be secondarily superimposed on an existing renal disease. It is useful to make this distinction, as the primary cases have a prospect of greater and more permanent relief by operation. In one other case of renal hypertension the presence of a malignant phase was in doubt:

A married woman aged 50, who had suffered from severe occipital headaches for two years, had a blood pressure which varied between 180/120 and 300/170 mm. Hg, but was usually in the region of 240/150. Retinal examination revealed severe vascular sclerosis with occlusion of the right superior temporal artery. There was considerable retinal oedema, with many haemorrhages but only a few exudates and no papilloedema. The blood urea was 24 mg. per 100 ml. and the urea clearance 48% of normal. The cerebrospinal fluid pressure was 230 mm. of water. Pyelography revealed calculi embedded in both kidneys. Renal biopsy performed at operation showed necrotic changes in the afferent arterioles.

Symptoms

All patients had symptoms referable directly or indirectly to their raised blood pressure. Headache, often accompanied by severe lassitude, was the commonest. Only two patients did not complain of it, and in 13 it was the presenting symptom. Eleven patients had visual disturbances. Four had suffered from encephalopathic attacks before operation—an index of the severity of the hypertension in this series. Three patients had cardiac dyspnoea—paroxysmal in one and on exertion in the other two. Only three patients had prior knowledge (15, 14, and four years respectively) of their raised blood pressure. In all the other cases hypertension was a recent discovery.

Physical Findings

Blood Pressure.—In all patients the blood pressure was recorded on several occasions before operation. It was confirmed that the diastolic pressure gave a better indication of the severity of the hypertension. In only three patients

was the diastolic pressure constantly below 130 mm. Hg. The systolic pressure varied widely from day to day, sometimes by as much as 60–70 mm. Hg, but it was below 200 mm. Hg in only one patient. With rest in bed, most patients showed some fall in blood pressure, as shown by the accompanying table.

Blood Pressure (mm. Hg)	On Admission	With Bed Rest
Systolic:		
180–199	1 patient	7 patients
200–219	4 patients	4 ,,
220–239	6 ,,	7 ,,
240–259	8 ,,	6 ,,
260–279	4 ,,	—
280	1 patient	—
Diastolic:		
110–129	3 patients	10 patients
130–149	9 ,,	7 ,,
150–169	9 ,,	7 ,,
170–189	3 ,,	—

The effect of sedatives was investigated in five cases. "Sodium amytal," 3 gr. (0.2 g.), was given three times at hourly intervals, and the blood pressure was recorded at hourly intervals thereafter. The diastolic pressure fell below 90 mm. Hg in three of the five cases. The experience has not been large enough to estimate the usefulness of the test in selecting patients for operation.

Fundal Appearances.—The retinae were abnormal in all 24 patients—the six cases of malignant hypertension had papilloedema; 13 patients had haemorrhages and exudates, usually with retinal oedema, as well as arterial sclerosis; and five had arterial changes only; two of the latter had hypertensive heart disease, and one, a woman aged 52, was blind in one eye from an occlusion of the central retinal artery 16 years previously. Her blood pressure had been recorded as normal at the eye hospital she attended at that time.

Cardiac State.—This was assessed clinically, radiologically, and by electrocardiogram in all cases. Hypertensive heart disease was regarded as present when there was considerable cardiac enlargement and a grossly abnormal electrocardiogram. Four patients were considered to have this condition. Minor degrees of cardiac enlargement, usually observed radiologically, and minor electrocardiographic changes, such as diphasic or early inversion of T waves, were not considered indicative of this state. Congestive heart failure was not present in any of these four patients, but two had increasing breathlessness on exertion and one had frequent attacks of paroxysmal dyspnoea with blood-stained sputum and radiological pulmonary engorgement. The other patient, a woman aged 49, had no cardiac symptoms before operation, but one month afterwards developed congestive failure, from which she died four months later.

Renal Function.—The blood urea and the van Slyke urea-clearance tests were estimated in every case. The specific gravity of the urine was recorded daily, and often by depriving the patient of fluids for 12 hours in order to obtain the maximum urine concentration. Seven patients had a blood urea greater than 40 mg. per 100 ml., and five had a urea clearance of less than 70% of normal. Both tests were abnormal in three of the patients with malignant hypertension. The intravenous pyelogram was normal in 19 patients. One other had compensatory enlargement of the left kidney, and another had calculi in the lower calices of both kidneys. Excretion of the dye was poor in two of the patients with malignant hypertension. A retrograde pyelogram was normal in one patient with an equivocal intravenous test. A portion of renal cortex was removed at operation for histological examination on 12 occasions. Although the appearance was abnormal in every case, and on the whole consistent with the clinical and pathological findings, not enough experience of this procedure has been acquired for an opinion to be given on its value.

Lumbar Puncture.—This was performed on 12 patients before operation. In nine the cerebrospinal fluid pressure was greater than 170 mm. of water, and greater than 300 mm. in two of the patients with malignant hypertension.

This series therefore consists of comparatively youthful patients suffering from severe hypertension. There is little that medical treatment alone can offer such patients, and the prognosis is always doubtful and often grave. As in addition symptoms were severe enough to interfere with their work and daily lives, it was felt that operation was justified.

Operation

The operative procedure in all cases was that of Smithwick and need not be elaborated, the coeliac ganglia, splanchnic nerves, and sympathetic chain being removed. The chain was excised in varying lengths, but never less than from the ninth dorsal to the first lumbar inclusive. The operation differs from that of other reported methods in that the coeliac ganglia were always excised. The amount of post-operative back pain could be diminished by resecting the twelfth (subcostal) nerve as fully as possible. All cases are now drained, owing to the difficulty in distinguishing between deep haemorrhage and post-operative hypotensive reaction, which undoubtedly caused the two deaths after operation. A blood transfusion was given only if there was appreciable haemorrhage from the drainage-tube.

Complications.—Two patients died as a direct result of operation, both from haemorrhage within 24 hours. A liability to haemorrhage due to increased capillary fragility is well known in severe hypertension. A pronounced fall in systolic pressure, with narrowing of the pulse pressure, is a usual accompaniment of this operation, and as a result immediate post-operative haemorrhage is difficult to detect. There is considerable loss, too, of the usual autonomic response to haemorrhage, and profound shock quickly develops. Three patients had post-operative complications severe enough to delay convalescence—two had an empyema and the other developed a massive pleural effusion, which responded well to repeated aspiration.

In 11 cases the following minor complications occurred: pneumonia and atelectasis, 3; pneumothorax, 2; haematoma formation, 2; pleural effusion, 1; infection of wound, 1; paroxysm of auricular fibrillation lasting for two hours, 1; bulging of the abdominal wall due to section of the eleventh and twelfth intercostal nerves during operation, 1.

Mortality

In addition to the two post-operative deaths, three other patients have since died—in two cases two months and in one case five months after operation. All three were seen in the early stages of this investigation and were considered at the time to be gravely ill; they would not now be submitted to operation. Renal function was poor, and at necropsy the typical changes of malignant hypertension were found. Two died from uraemia and one from congestive heart failure, and operation appeared to have no effect on the progress of their disease.

Results of Operation

In one of the remaining 19 cases the operation remains incomplete because of an empyema which developed after the first stage. The other 18 have been observed for varying periods: over 18 months, 1 case; 12–18 months, 7 cases; 6–12 months, 9 cases; and 5 months, 1 case.

Effect on the Blood Pressure

This has been disappointing. After a temporary fall for a week or two the blood pressure starts to rise again and within three months has returned to the neighbourhood of the pre-operative figure. In only five of the 18 cases has the fall in blood pressure been appreciable, but even in these the final figure is well above normal.

No striking blood-pressure changes with alteration of posture have been observed. Only three patients have reported dizziness on standing up, and this was transitory. There was some fall in blood pressure in most cases immediately on standing up from the recumbent position, but this was no greater than could be accounted for by the lability of blood pressure in the hypertensive patient.

This failure to produce permanent lowering of blood pressure suggests that the effect of operation can at most be palliative.

Retinal Change

The improvement in the appearance of the fundus oculi has been as rapid and dramatic as that reported elsewhere (Bourne *et al.*, 1948). Retinal oedema, haemorrhages, and exudates have with one exception disappeared, and so far have not returned. This improvement is useful for purposes of record, and it may also represent a diminution in the rate of progress of the disease. It is felt, however, that there has been a tendency to lay undue stress on this fundal improvement, and a word of caution is necessary. The grading of retinal change suggested by Wagener and Keith (1939) is useful as a guide to severity, but its limitations should be appreciated.

In benign essential hypertension, the presence of retinal changes probably indicates a tendency to cerebral vascular incidents (Foster Moore, 1916–17), but not to heart failure or coronary artery disease. Also, many cases of benign hypertension have occasional exudates and haemorrhages which appear and reabsorb spontaneously over a period of years. Thrombosis of the retinal veins, too, may produce a startling fundus appearance without necessarily any worsening of outlook for the patient. Again, although exudates and haemorrhages cleared from the retinae of these patients, it was noteworthy that the vessels themselves showed little alteration even when only spasm was observed. Lastly, hypertensive retinopathy is commonly symptomless, and visual impairment slight unless papilloedema is present, or unless the patient is unlucky enough to have a patch of exudate or a haemorrhage over the macula or a thrombosis of one of the vessels, and consequently the improvement in fundal appearance is of less interest to the patient than to the observer. Therefore it is felt that this improvement should be regarded with caution.

Cardiovascular State

Perhaps the most urgently required information concerns the effect of this operation in hypertensive heart disease. Is there any prospect of improvement here as in the fundus oculi, or will the heart be as little affected as the blood pressure? Unfortunately this series is too small to provide an adequate answer, there being only four cases of hypertensive heart disease. Their case records are as follows.

Case 1.—A blacksmith aged 30 had suffered from attacks of paroxysmal breathlessness, occasionally associated with blood-stained sputum, for a month before his admission to Westminster Hospital in April, 1947. Apart from a similar isolated attack in August, 1946, his previous health had been good. His father had died from the effects of high blood pressure.

His physique was good, but the heart was enlarged, and radioscopy revealed pulmonary engorgement. Pulsus alternans, gallop rhythm, and rales at the lung bases were observed for 48 hours after admission, but there was no congestive failure. The blood pressure was 235/135 mm. Hg, falling to 180/120 mm. Hg with rest in bed. There was a sharp inversion of the T waves in lead I and left axis deviation in the electrocardiogram. The retinal arteries were thickened, and many exudates and a few haemorrhages were present. Renal function was normal.

Immediately after lumbo-dorsal sympathectomy in April–May, 1947, the blood pressure fell to 135/85 mm. Hg, but three weeks later it rose to 160/110. Two months later he was well, had gained 12 lb. (5.44 kg.) in weight, and not only had the heart decreased considerably in size and the lungs cleared radiologically, but the T waves in lead I were large and upright and the retinal exudates had disappeared.

Eighteen months after operation there had been no further breathless attacks, and he had been working continuously as a carpenter. He was slightly breathless on exertion, probably due mainly to obesity, as his weight had increased from 8 st. 12 lb. (56.25 kg.) at the time of operation to 11 st. 9 lb. (73.94 kg.). The blood pressure was 210/165 mm. Hg, and the retinae were normal apart from arterial changes. The lung fields were clear radiologically, but there was moderate enlargement of the left ventricle. The T waves were diphasic in lead I but negative in CR_4. (For chest films see special plate, Figs. 1, 2, and 3. Electrocardiograms of this case are shown in Figs. A, B, and C.)

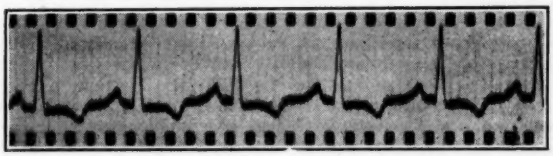

FIG. A.—*Case 1.* Hypertensive heart disease. Electrocardiogram lead I before lumbo-dorsal sympathectomy. T wave sharply inverted.

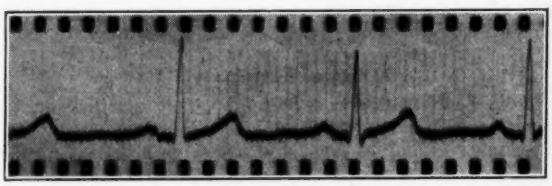

FIG. B.—*Case 1.* Hypertensive heart disease. Electrocardiogram lead I two months after lumbo-dorsal sympathectomy. T wave now upright.

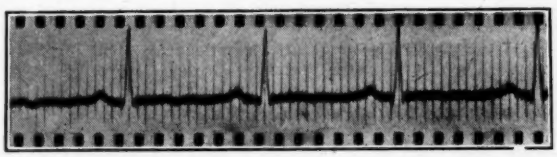

FIG. C.—*Case 1.* Hypertensive heart disease. Electrocardiogram lead I eighteen months after lumbo-dorsal sympathectomy. T wave now diphasic.

This patient appeared to derive considerable benefit from operation, although the heart is now enlarging again and the fall in blood pressure was only transitory.

Case 2.—A gatekeeper aged 42 had suffered from high blood pressure with persistent early morning headaches for five years, breathlessness on exertion and dizziness for four years, and for two months had felt very tired and unwell. The blood pressure was 230/150 mm. Hg, with persistent pulsus alternans, and the heart was considerably enlarged. The T waves in leads I, II, and CR_4 were inverted, with left axis deviation reversible by inspiration. Lumbo-dorsal sympathectomy was performed in May, 1948. Headache and dizziness ceased at once, and the

breathlessness slowly improved. Seven months after operation he was working, was feeling well, and became only slightly breathless on moderate exertion. His weight had increased from 9 st. 6 lb. to 11 st. 4 lb. (59.87 to 71.67 kg.). The heart size, however, was unaltered, and the blood pressure was 205/140 mm. Hg, although pulsus alternans had not been observed since two months after operation. In September the electrocardiogram showed that left axis deviation had disappeared and TCR_4 was upright, but T was still negative in the other leads.

Here objective improvement has not been striking, although subjectively the patient is much better, and for this reason it is felt the operation was worth while.

Case 3.—A married woman aged 47 had suffered from eclampsia 28 years previously. She had intermittent headaches for many years, and for five months had been breathless on exertion. There was no family history of high blood pressure. She was obese and there was moderate cardiac enlargement; the blood pressure was 230/150 mm. Hg. The electrocardiogram showed left bundle-branch block, and there were retinal arterial changes. Renal function was normal. A month after sympathectomy in December, 1947, the blood pressure was 145/90 mm. Hg, but a year later the figure was 240/140. Her heart, however, had not increased in size, and her breathlessness appeared to be mainly due to her obesity, as she had gained 9 lb. (4.08 kg.) in weight. Left bundle-branch block was still present.

Case 4.—A married woman aged 49 had suffered from high blood pressure for 19 months, associated with headaches, which ceased for three months with sedative treatment and then recurred. For a month she had blurring of vision in both eyes. The blood pressure was 220/160 mm. Hg, the heart was enlarged, and the lungs were engorged radiologically. T_1 was diphasic, the ST segments were depressed, and left axis deviation was present in the electrocardiogram. Sympathectomy was performed in May, 1948, but the blood pressure fell only to 180/140 mm. Hg. A month later she suddenly developed rapidly progressive congestive heart failure, from which she died in October, 1948. The post-mortem findings were those of congestive heart failure with malignant hypertension.

Malignant Hypertension

Four of the six patients with malignant hypertension are now dead. One died as a result of operation, two from uraemia two months later, and one from heart failure five months later. These last three patients stood the operation well, but the course of the disease was not delayed. The two survivors, both women, are now well and have shown considerable improvement. Their case histories are as follows.

Case 5.—A married woman aged 57 had for a month suffered from severe headaches, worse on stooping, with mistiness of vision. Both eyes showed gross papilloedema, with extensive haemorrhages and a few exudates around the disks (Plate, Fig. 4). The blood pressure was 270/140 mm. Hg, and the cerebrospinal fluid pressure was greater than 300 mm. of water. Radiological films of the skull, the electro-encephalogram, heart, and renal tract were all normal. Sympathectomy in March–April, 1948, only slightly lowered the blood pressure, but the papilloedema, retinal haemorrhages, and exudates rapidly disappeared (Plate, Fig. 5). The headaches also ceased, and seven months later she was well, although the blood pressure was still 260/140 mm. Hg.

Case 6.—A girl aged 17 complained of early morning headache, often associated with vomiting, for two years. Apart from transient mistiness of the left eye in August, 1947, her health had always been good. The blood pressure was 260/180 mm. Hg. There was moderate albuminuria, but no casts were seen, and the blood urea was 39 mg. per 100 ml. Mr. E. F. King reported on the retinae (Plate, Fig. 6): "There is retinal oedema particularly of the optic nerve heads and areas immediately adjacent. There is gross retinal exudate round the optic disks, and scattered exudates throughout the fundi, but only a few haemorrhages. Attenuation of the arteries and congestion of the veins is pronounced."

Renal biopsy performed at sympathectomy in March, 1948, showed the necrotic changes of malignant hypertension. Nine months later she felt well, had no headache, and her weight had increased from 8 st. 1 lb. (51.26 kg.) at the time of operation to 10 st. 12 lb. (68.95 kg.). The blood pressure was 180/120 mm. Hg. The vision in the left eye was poor (hand movements only), but good in the right eye. Mr. King reported: "Both fundi, left much more than right, show consecutive optic atrophy. There is extreme attenuation of the arteries, some in the left eye being completely occluded, and widespread retinal degeneration and some old retinal exudates. There are no recent haemorrhages and exudates" (Plate, Fig. 7).

In Case 6 the result has been particularly satisfactory, as the blood pressure has been significantly lowered, the malignant phase being replaced by a relatively benign hypertension. The fundal appearance, too, has considerably improved, although there is impaired vision due to consecutive optic atrophy.

General Health

Undoubtedly one of the most impressive features of this operation is the general improvement in health it causes. Headache, lassitude, and vertigo disappear, and the patients quickly acquire new energy. Most patients have returned to work, and often they must be deterred from working too hard. A significant gain in weight was noticed in 11 patients—sometimes of more than 2 st. (12.7 kg.)—and obesity has occasionally called for dietetic restriction. Only one patient, obese before operation, lost weight afterwards.

Discussion

Lumbo-dorsal sympathectomy has been performed in 36 cases of severe hypertension, 18 of which have been observed for varying periods up to 18 months. The high blood pressure has remained virtually unaltered, and for this reason the operation is expected to be only palliative. In spite of this, however, general health and vigour are improved, headache and lassitude have disappeared, and weight has been gained. Occasionally the heart may decrease in size and the electrocardiogram improve if hypertensive heart disease was not too severe before operation. Even if this does not occur, breathlessness on exertion may diminish and cardiac asthma disappear.

There is as yet little information to indicate which cases of hypertensive heart disease will benefit most by operation or how long improvement will last, and the experience from the four cases recorded here is too small to give a clear guide. It is felt, however, that auricular fibrillation, congestive heart failure, past or present, and evidence of coronary artery disease are contraindications to operation. Patients with considerable cardiac enlargement, persistent pulsus alternans, gallop rhythm, or gross electrocardiographic changes are unlikely to improve, and should be submitted to operation only when other strong indications are present. The following patient was refused operation on account of his cardiovascular state:

Case 7.—A man aged 48 had known of his high blood pressure and enlarged heart for five years. For two years before his admission to Westminster Hospital in February, 1947, he had suffered from intermittent headache, momentary double vision, and gradually increasing intermittent claudication. The blood pressure was 220/130 mm. Hg, with pulsus alternans. The heart was enlarged, and gallop rhythm was present. The retinal vessels showed arterial sclerosis, and no pulsation could be felt in the arteries of the feet. The blood urea was 36 mg. per 100 ml.

Rest in bed brought temporary improvement, but his headache recurred on discharge from hospital, and he became short of breath on slight exertion. In May, 1947, he developed a left hemiplegia. In May, 1948, the sudden onset of auricular fibrillation caused acute congestive failure, which responded well to treatment in another hospital. When seen in August, 19

there was considerable cardiac enlargement and auricular fibrillation. The liver margin was just palpable, with slight neck-vein engorgement but no oedema. The hemiplegia was unaltered. The blood pressure was 180/80 mm. Hg. His condition was considered to have advanced beyond the stage where sympathectomy was practicable.

It is considered that operation should be limited to relatively young people, as permanent arteriosclerotic changes are less likely to have occurred. Moreover, the disease generally progresses more rapidly in the young and intervention is more necessary. However, an upper age limit has not been adhered to rigidly, although any patient over the age of 50 requires special scrutiny. Each case should be viewed on its merits, and age should contraindicate operation only when permanent vascular disease is present, which with even merely a temporary lowering of blood pressure would make arterial thrombosis a serious hazard.

Malignant hypertension is not in itself a bar to operation. In fact, when the disease is primary it is especially indicated provided renal function has not seriously deteriorated. Two of the six patients in this series, both primary cases, are alive and have improved considerably. Operation seems to have "broken the vicious circle," and the malignant phase for the time being has abated. The prospect of relief of even a few cases of this grave condition is distinctly promising. In three of the fatal cases the patients were severely ill and had poor renal function, so their failure to respond caused little surprise. It must be emphasized that patients with poor renal function should not be submitted to operation. The blood urea should be less than 60 mg. per 100 ml. and the urea clearance greater than 50% of normal. It is doubtful if the operation is ever justified where the blood urea is greater than 80 mg. per 100 ml.

Operation may be performed in cases of hypertension secondary to some irremovable cause. There were three cases of chronic nephritis in this series, and some others may have had nephritis of the repens type, although there was no direct evidence of this. If the renal function is satisfactory progress of the disease may be slowed by operation.

Lumbo-dorsal sympathectomy then seems beneficial to young patients with severe hypertension who have severe symptoms, no substantial arteriosclerosis or gross heart disease, and good renal function. Such patients represent only a minority of all cases of hypertension, and operation will afford only partial relief. There is, however, considerable relief of symptoms, and the tempo of the disease appears to be slowed. Complete relief could hardly be expected seeing that the kidney remains uninfluenced, and for this reason it is felt that more extensive resections of the sympathetic nervous system, involving more than two operations with their additional hazards, are unjustified.

The advisability of operating on early cases of hypertension before the heart and other organs are affected may be considered. Should not hypertension in its larval stages be sought, as early cancer is sought, for surgical treatment? Such reasoning is fallacious, as the problems of cancer are dissimilar from those of persistent hypertension. Moreover, pathological change in response to raised blood pressure varies widely from case to case, although hypertension starting in youth usually has a graver prognosis than that beginning in later life. Nor can one tell whether a young patient with mild hypertension will go rapidly downhill or will lead a useful life for 10, 20, or more years. This being so, a surgical procedure involving two major operations in a patient who is virtually well is unjustifiable, particularly when the operation is not curative, and its late effects are uncertain. For this reason operation was not advised in either of the two following cases.

Case 8.—A locomotive fireman, aged 27, for four years had attacks of momentary dizziness in which he did not fall. He had been under observation for two years, during which time his blood-pressure range was 200–170 mm. Hg systolic and 130–115 mm. Hg diastolic, except twice when figures of 140/95 and 130/80 mm. Hg had been obtained. His family history was healthy and his previous health good.

On admission to Westminster Hospital in May, 1948, he was rather apprehensive, and the blood pressure was 200/120 mm. Hg, but a daily record showed a consistently high figure. The cardiovascular system was otherwise normal. The urine was normal and he could concentrate to a specific gravity of 1030. The retinal arteries showed spasm in some segments but no exudates or haemorrhages. On sedation with sodium amytal the lowest blood pressure recorded was 130/95 mm. Hg.

Since then his blood pressure has remained consistently high, and he is considered to have essential hypertension, although he admits that "his nerves quicken every time he has his blood pressure taken." His dizzy attacks have ceased spontaneously, and his condition is not considered serious enough to warrant sympathectomy at present.

Case 9.—A married woman had in April, 1942, when aged 22, suffered for six months from high blood pressure with morning headache, nausea, and blurring of vision in the right eye. On examination the blood pressure varied between 260/200 and 160/130 mm. Hg, and the heart was enlarged. The retinae showed bilateral papilloedema, numerous haemorrhages and exudates, with a right macular fan and narrowing of the arteries. There was moderate albuminuria, with occasional hyaline casts. The blood urea was 36 mg. per 100 ml. and the urea clearance 49% of normal. Intravenous pyelography was normal. The cerebrospinal fluid was normal, but the pressure was 250 mm. of water.

Whilst in hospital at that time she had severe headaches, vomited frequently, and had an epileptiform convulsion, but later improved considerably, although on discharge the blood pressure was still 200/150 mm. Hg. In October, 1943, a pregnancy, her first, was terminated on account of her medical condition, but by June, 1945, her headaches had become less frequent and she returned to work. In February, 1946, she had an attack of slurring of speech and drowsiness lasting a week, and was readmitted to Westminster Hospital. With rest and sedatives her blood pressure fell from 210/130 to 160/100 mm. Hg. An electrocardiogram showed left axis deviation with inverted T waves in leads I and CR_4. Papilloedema, exudates, and haemorrhages were no longer present in the retinae, but her physical condition was otherwise the same.

On discharge from hospital she returned to light work, as her headaches had virtually ceased, and thereafter the blood pressure averaged 170/110 mm. Hg. On reassessment in April, 1948, the blood pressure fell to 140/95 mm. Hg with rest in bed, but the heart size was the same as in 1942. There were no exudates or haemorrhages in the fundi, and the cerebrospinal fluid pressure was 120 mm. of water. The blood urea was 39 mg. per 100 ml. and the urea clearance 40% of normal. She is still under observation, and is well.

This patient's condition shows a remarkable spontaneous improvement, over a period of six years, from a severe hypertensive state with encephalopathy to a relatively benign condition. If sympathectomy had been performed in 1942, as had been contemplated, her improvement would no doubt have been attributed to this. Her story indicates the difficulty of assessing such cases with a view to operation.

Another reason for not operating in the early stages is that a high blood pressure is often symptomless, and the patient seeks advice only when the heart or other organs are impaired. The disease may then be well advanced, even beyond the scope of sympathectomy, as in the following case.

Case 10.—A civil servant aged 46 had always been in good health until January, 1948, when he started to have recurrent

sore throats. In 1943 he had been accepted as a first-class life by an insurance company, the blood pressure then being 130/90 mm. Hg. In June, 1948, he was admitted to Westminster Hospital for tonsillectomy, and on pre-operative examination was found to have a blood pressure of 230/150 mm. Hg with pulsus alternans. There was no other cardiovascular abnormality, except that the fundi revealed exudates, haemorrhages, and vascular changes. The blood urea, however, was 120 mg. per 100 ml., and the urea clearance 26% of normal. Whilst in hospital he was free from symptoms and sympathectomy was not performed, on account of his poor renal function. He died from uraemia three months later.

Summary and Conclusions

Twenty-four cases of severe hypertension which have undergone lumbo-dorsal sympathectomy are presented. Their pre-operative state is described, and the results of operation are discussed. The following conclusions are reached: (1) the chances of permanently lowering the blood pressure are slight; (2) retinopathy, when present, may improve considerably; (3) there is not enough evidence to indicate clearly the effect in hypertensive heart disease—some patients may appear to improve temporarily, but this is unlikely with severe disease; (4) operation causes striking symptomatic relief, with notable gain in weight; and (5) in primary malignant hypertension the malignant phase may disappear.

In a properly selected case the relief is greater than that which can be obtained by medical treatment alone. Such cases are not numerous. The operation should be limited to severe and rapidly progressive cases with severe symptoms referable to their hypertensive state which comply with the following conditions: age less than 50 years, the renal function should be good, there should be no evidence of coronary or cerebral artery disease, and there should be no severe heart disease or heart failure.

Operation in early and mild cases is not advisable.

We are indebted to Sir Arnold Stott, Sir Adolphe Abrahams, Dr. W. E. Lloyd, Dr. S. P. Meadows, Dr. C. J. Gavey, Dr. F. D. Hart, and Dr. J. L. Lovibond, under whose care these patients were admitted, for permission to use their case records. We are particularly grateful to Sir Arnold Stott and Dr. C. J. Gavey for their continuous assistance and advice, and to Mr. E. F. King for his ophthalmic reports on these patients. We also wish to record our gratitude to Mr. C. E. Drew and Miss Joan Smith for help with the records and follow-up; to Dr. Peter Hansell for reproducing the chest films and electrocardiograms; and to Miss F. E. Stevens for clerical assistance.

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Dr. F. M. Foote, executive director of the United States Society for the Prevention of Blindness, said in his address to the society's conference in New York: "Among the most serious eye problems that we must tackle is glaucoma. We are all deeply disturbed to know that at least 25,000 Americans are blind from glaucoma and approximately 150,000 more have lost the sight of one eye from this disease. We know that untold numbers of men and women over 35 years of age are working this morning in offices, in industry, in their own homes, unaware that they have early glaucoma—unaware that, unless they are fortunate enough to be among those discovered early, they will lose their eyesight so slowly, so gradually, that a large part of their useful vision will be gone before obvious symptoms bring them to the attention of a competent eye specialist. . . . The best estimates available on eye injuries in industry indicate that each year 100 workers are blinded and an additional 1,000 lose the sight of one eye. It should be possible, 40 years from now, to show that 90% of this unnecessary eye-loss has been prevented. If a man has defective eyesight, as in the case with 40% to 50% of industrial workers, he will find that safety glasses actually help him to do his job better if the hardened lenses are ground to include the correction he needs. Industry is in a position, therefore, not only to prevent accidental loss of sight, but also to help in preventing the loss of a skilled employee because of a visual handicap due to disease."

PAINFUL AMPUTATION STUMPS AND PHANTOM LIMBS*

TREATMENT BY REPEATED PERCUSSION TO THE STUMP NEUROMATA

BY

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Current surgical practice concerned with amputations involves many measures which are designed to protect the stump neuromata from trauma or irritation. At the operation the nerves are often divided as short as possible, while most modern prostheses aim at avoiding pressure on nerves. In spite of these precautions pain in the amputation stump or phantom limb remains common (Sliossberg, 1948), and is often associated with spasmodic twitchings of the stump. The latter may become so violent that the term "epilepsy of the stump" is sometimes used; Weir Mitchell (1872) employed the term "chorea" to describe them.

The medical treatment of these cases has been disappointing, and the difficulties encountered in getting relief by surgical measures is evident from the current neurosurgical practice of treating some of these cases by excising areas of the brain.

The following case records, however, indicate that treatment at the periphery may, after all, prove successful by a very simple procedure. This possibility was considered for three chief reasons. First, in the normal limb nerve endings in the skin are rendered insensitive by occupations which involve repeated minor trauma or prolonged fine pressure on the skin. Secondly, conduction of a mixed nerve is easily interrupted by repeated pressure, without the production of any spontaneous pain. Thirdly, the regenerating nerve fibres in an amputation stump are likely to be no less vulnerable to minor trauma or pressure than are normal nerves and nerve endings. It seemed obvious, therefore, that the effect of maintaining tender neuromata in a chronically concussed state merited investigation.

The first method tried was to deaden the neuromata with procaine and to percuss them for 10 to 15 minutes with a piece of wood.

Case 1

In 1937 a man aged 25 lost portions of four fingers of his left hand in a machine accident. He made a good recovery and remained fit for work as a carpenter until February, 1944, when the palm of the left hand began to sweat excessively. One year later, while serving in the South African Army, he began to experience sharp stabbing pains in the phantom fingers and dorsum of the hand. On Feb. 28, 1944, the stellate ganglion was excised. The pain was relieved for two weeks, but then returned with great severity.

On examination in Cairo, four weeks after operation, Horner's syndrome was present on the left and the injured hand did not sweat. The ends of the amputation stumps were very tender, especially over some palpable neuromata. There was no sensory loss. On April 2 the digital nerves of the index finger stump were injected with procaine, and then for about 15 minutes the end of the stump was hammered quite vigorously with a light piece of wood (a wooden test-tube container). This treatment was very successful, and the other tender stumps and scars were similarly treated. Thereafter it was found helpful if the patient two or three times daily tapped the tips of the amputation stump on a table for several minutes at a time, and if he applied prolonged pressure by handling tools firmly. He could keep all spontaneous pain and stump tenderness in abeyance.

*A preliminary report.

On April 26 he was using his hand freely without pain, and after designing and constructing a small wooden hammer, which he gave us for the treatment of similar conditions, he was discharged to duty on April 29.

Circumstances precluded the further study of such cases at that time. In recent months, however, six consecutive cases of intractable pain in amputation stumps and phantom limbs have been treated with such uniform success that this preliminary report seems desirable.

Case 2

A private aged 25 was injured by a circular saw in December, 1947. Both thumb and index finger of the right hand were severely damaged and partly amputated. After several plastic operations further amputations were carried out and tender neuromata were excised in January, 1949. The wounds healed, but the neuromata grew again quickly and caused great pain on attempts to use the hand.

On March 5, 1949, the neuromata were injected with procaine and percussed lightly for about 10 minutes. The patient was then given vigorous gripping exercises in order to cause pressure on the neuromata. Thereafter he continued to hammer the neuromata whenever the sensitivity returned. He found, however, that squeezing a piece of wood with his hand was most effective, and even on waking in the morning, when some sensitivity had returned, a few vigorous squeezes of a cricket-ball abolished the sensitivity.

Case 3

A soldier aged 24 was wounded in Italy in June, 1944. There were injuries to the right frontal region of the brain, the left eye, and the left shoulder. The left upper limb was amputated through the shoulder-joint.

When admitted to hospital in February, 1949, various aspects of his case were investigated, but only the state of the amputation stump need be considered here. There was considerable pain in the phantom arm, which consisted of the forearm, hand, and fingers in a position of flexion. There was a large stump neuroma, measuring nearly 2 in. (5 cm.) in diameter, which when pressed upon caused pain in either the radial or the ulnar half of the phantom hand.

Treatment by percussion to this neuroma first aggravated the phantom-limb pain, but after treatment for about five minutes the pain disappeared, and with it the phantom sensation for half the hand also vanished for at least an hour. A slight change in the position of the hammering deadened that half of the hand which was unaffected by the first treatment.

The neuroma in this case was difficult for the patient to reach himself, and it was found that the application of local pressure was more convenient. A golf-ball was bandaged to lie over the neuroma at the shoulder, and the patient, by leaning his weight on the ball for half an hour, succeeded in making the neuroma insensitive for some hours.

Case 4

A man now aged 47 was wounded in 1917 at the age of 16. He lost his right foot and had a below-knee amputation performed. The stump caused a lot of trouble, and several operations and re-amputations were carried out. Finally in 1920 a mid-thigh amputation was done. Severe pain in the stump and phantom foot continued, and six further operations were carried out between 1929 and 1942 to excise neuromata and spurs on the stump. In 1946 pain was again severe, and in August, 1946, the sciatic nerve was divided in the buttock and the distal part of the nerve removed. After this he was almost free of pain for a year; but again the pain recurred, and during the past three years it has been very troublesome and has become steadily more frequent and severe. The pain was severe during the day and kept him awake at night. He was taking both codeine and phenobarbitone tablets regularly. He could wear his artificial leg all day, but after walking for half a mile shooting pains and involuntary jerking of the stump forced him to stop. The pains were felt chiefly in the phantom foot, especially on its lateral aspect.

The patient was admitted to hospital on March 29, 1949, with a view to surgical division of the spino-thalamic tract. It was decided, however, first to try the effect of percussion treatment. The amputation stump appeared healthy, but there were several tender spots which on pressure caused pain in the phantom.

Treatment was begun on April 2. Progress was good, and after three weeks he was discharged home. By this time pain in the phantom was infrequent, and could be quickly abolished by percussion. For periods of several hours the phantom disappeared entirely. The jumping of the stump also ceased. He had required no drugs, and had slept eight to nine hours every night for two weeks. A mechanical vibrator* was specially effective in his case, and for some hours after treatment there was neither pain nor awareness of the phantom.

When seen two weeks after returning home he reported that one or two short periods of hammering administered daily by his wife sufficed to keep the pain in abeyance.

Case 5

This patient, now aged 54, was wounded in 1918 in the right thigh. Chronic infection followed, and violent jerks of the wounded leg—it would jump right out of bed—led to high mid-thigh amputation in 1947. Pain in the phantom, however, became continuous from the day of the amputation. A tight pain in the lateral three toes of the phantom was particularly unpleasant. He could wear his prosthesis for only an hour at a time. The stump was healthy, but there were medial, lateral, and posterior tender spots which on pressure caused pain in the phantom.

Treatment was started on April 7, 1949, and proved to be very successful. Percussion with a mallet and applicator was specially effective, and the patient learnt to abolish all phantom pain by this method.

On discharge home on May 13 he was able to wear his prosthesis all day; he slept well without drugs, and the pain and jactitation of the stump were controlled by self-administered treatment for about 15 minutes daily. When seen a week after returning home the amount of hammering required to allay pain had become even less.

Case 6

This patient, now aged 59, was hit in the right knee by a shell fragment in 1918. Chronic infection followed, and a mid-thigh amputation was carried out in 1929. He remained free of all pain until November, 1948, when the stump began to jactitate in association with a "kicking" pain in the phantom leg. He found that a bandage applied to the stump so tightly that it ulcerated the skin was effective in arresting the jactitation of the stump.

Treatment was begun on April 22, 1949, and was very successful. It was soon possible for him to wear his prosthesis all day without either pain or jactitation. After treatment had been continued for a month he found that hammering for about 10 minutes twice daily was sufficient to keep the phantom-limb pain in abeyance.

Case 7

A man now aged 37 was wounded in the left foot on Oct. 24, 1942, and had a mid-leg amputation. He has been conscious of a phantom foot ever since, and the sensation of his great toe nail being twisted off was most unpleasant. There was also some jactitation of the stump at night.

The stump was healthy, but there were three very sensitive neuromata. Treatment was started on April 28, 1949. The sphygmometer cuff quickly rendered the neuromata insensitive for the first treatment, and the patient learnt to abolish both phantom and its pain by percussing the neuromata with a wooden mallet and applicator. If he treated the stump in the evening he could depend on having a comfortable night. He was discharged home on April 13, and a week later the amount of treatment necessary was even less.

When he was first treated percussion for 10 minutes abolished the phantom for about half an hour, but after two weeks one treatment of less duration abolished the phantom completely for four hours, while discomfort was avoided by one short period (five minutes) of treatment daily.

During percussion of the posterior neuroma this patient gave a vivid account of the temporary aggravation of the phantom sensations. These included reopening of the old wound of his

* The "Stanco" vibrator, as supplied by Stanley Cox, Ltd., 11, Gerrard Street, London, W.1.

foot, followed by a sensation of blood welling up between his toes. Percussion of a medially placed neuroma caused a temporary sensation of the nail being lifted off the phantom great toe. He generally felt he could move the phantom toes, but after treatment by percussion this subjective ability to move the phantom disappeared.

Present Plan of Treatment

The evolution of the best plan of treatment is still a matter for experiment, but the following method will be successful in most cases.

The use of a local analgesic before the first treatment has been discontinued as unnecessary, and instead a sphygmometer cuff is applied to the amputation stump and inflated to over 200 mm. Hg. Within two or three minutes the tender scars and neuromata become less sensitive, and gentle hammering with a wooden mallet or by means of a mechanical vibrator can be started and continued with increasing vigour for about 10 minutes. The blows of the mallet are usually transmitted to the neuroma through a wooden applicator (see below).

If the stump is too short for the sphygmometer cuff, hypalgesia of the neuromata can be obtained by prolonged pressure on them, and indeed the application of pressure is just as effective as hammering in abolishing the stump pain, as shown by the use of a golf-ball in Case 3.

During percussion or pressure on the neuromata a great variety of sensations are referred to the phantom foot or hand. These gradually become less, and the part of the phantom affected becomes numb and painless in 5 to 10 minutes if the strength of percussion is correct.

There are usually at least three neuromata in each stump, which should all be treated in the same way. Bruising of the stump should be avoided if possible, but if a bruise develops the next treatment can be applied to the nerve just above the neuroma.

After treatment the patient should wear his artificial limb for as long as he wishes—the more the stump is exercised the better. Jactitation usually ceases to be troublesome after the first or second treatment.

Treatment at first must be repeated at least twice daily, but before long one treatment a day is usually sufficient, and the patient soon learns to knock away his phantom pain whenever it becomes troublesome. A heavy mallet is required to treat neuromata buried under thigh muscles, but in other instances a light mallet may be adequate.

Repeated pressure is often useful, as in Case 2, while in a few instances the application of a sphygmometer cuff at a pressure of 200 mm. Hg for half an hour rendered the stump comfortable for many hours. This method, however, is probably not suitable for frequent use.

The patients soon learn the optimum period of percussion, and should each be provided with a suitable mallet and a wooden applicator with a smooth metal cap. For the applicator, half the handle of a hammer with a "dome-of-silence" on one end is very suitable if the rough edges of wood are filed smooth. The patients should continue treatment once or twice a day for several weeks; thereafter the duration and severity of treatment required should be ascertained by experiment in each case. Adequate information regarding the necessary duration of treatment is not yet available.

During percussion of the neuromata, but before the onset of general numbness in the stump, many sensations appear in the phantom that are of great physiological interest. Among these are, first, the reappearance of long-since-vanished parts of the phantom, and secondly the reappearance, as in Case 7, of pre-amputation sensations of the type described by Henderson and Smyth (1948).

Finally, it seems probable that some other painful conditions, such as tender scars, are just as easily relieved by this method of treatment.

Summary

The otherwise intractable pains and jactitations which sometimes occur in amputation stumps and phantom limbs may be abolished by repeated percussion of, or pressure on, the stump neuromata.

Repeated treatment by hammering or by a mechanical vibrator has proved to be highly successful in all of seven cases treated.

During treatment many interesting sensations appear in the phantom.

I am specially indebted to Dr. J. Spalding, who has assisted in this study, and to several members of the Ministry of Pensions medical administrative staff, who have encouraged this work and have referred patients for treatment.

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CHEMICAL SYMPATHECTOMY

BY

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The interruption of sympathetic activity in the extremities is not now a new process; it dates back for over 20 years. Reviews of large numbers of cases (Telford, 1944; Haxton, 1947a) have established the value of this treatment for a greater variety of circulatory disorders than is generally appreciated, and much discomfort and suffering can be relieved by its application. In addition to its beneficial effects in arteriosclerosis, thrombo-angiitis obliterans, erythrocyanosis, poliomyelitis, Raynaud's disease, perniosis and erythromelalgia, sympathectomy has been found to effect a prolonged and apparently permanent cure of hyperidrosis (Adson, Craig, and Brown, 1935; Telford, 1938; White, 1939; Haxton, 1948). But to achieve such benefit one or more open operations of a major character are required, and although the mortality rate is very small in expert hands (Telford, 1944) the treatment entails a good deal of discomfort and a convalescence of several weeks at least.

Patients who are in poor general condition are denied the benefits of sympathectomy, and although there is no fixed age limit comparatively few are treated by this operation after 60. Furthermore, a considerable number of sufferers from vascular disorders are not troubled seriously enough to justify the upset of open sympathectomy, and yet there is no doubt that their lot can be made much easier and the outlook improved by sympathetic interruption. It would seem, therefore, that there is a place for non-operative interruption of sympathetic activity if this can be achieved with little disturbance to the patient and with a lasting effect.

Paravertebral injections of 85% alcohol were introduced by Swetlow (1926) for anginal pain, but he aimed rather to anaesthetize the intercostal nerves than to block the sympathetic chain. The latter procedure was developed successfully by White (1935), who used alcohol to destroy the upper thoracic ganglia. Although a lasting interruption of sympathetic activity can be obtained, the injection of alcohol is followed in a considerable proportion of cases by a prolonged and painful neuritis. Ochsner (1943) states that the incidence of this complication is too high to make alcohol injection a justifiable substitute for open sympathectomy

and the few cases which I have treated thus have confirmed his conclusion. De Takats and his co-workers (1946), too, have abandoned the paravertebral injection of alcohol because of the unpleasant complications.

Phenol in aqueous solution has been used to destroy peri-arterial and presacral sympathetic nerves (Doppler, 1926; Binet, 1933) mainly in gynaecological cases. Doppler decided to use 6% phenol after a trial of many substances, including acids, bases, alcohols, and ethers, and Binet reports experiments which demonstrated that painting with 6% phenol interrupts the conductivity in the cervical sympathetic chain of rabbits. There was, however, a considerable return of conduction within an hour. Mandl (1947) injected 0.2 ml. of 6% phenol into the cervical ganglion of cats and noted that the Horner syndrome persisted for 14 days. Degenerative changes were present in the ganglion for up to 45 days after the injection. He states that this solution causes no damage to other tissues—a conclusion reached also by Binet (1933). This evidence suggests that aqueous phenol should be a useful agent for paravertebral injection of the sympathetic chain in cases in which an interruption of activity longer than that provided by procaine is required. So far as can be determined, however, it has not been thus used by previous workers.

I have used such injections in the treatment of vascular disorders since March, 1947, and altogether some 220 cases have received one or more paravertebral injections of aqueous phenol. This experience has shown the treatment to be of undoubted value and worthy of addition to the surgeon's armamentarium. Only lower-limb cases will be considered here, as the application of the procedure to vascular disorders of the upper limb is still considered to be in the experimental stage and no conclusions may be drawn.

Method

The method has undergone several alterations in the light of investigations on the cadaver and by radiography after the injection of a diodone-procaine mixture (Haxton, 1947b). Now two 12-cm. needles are inserted through skin weals 7 cm. from the midline and opposite the second and third lumbar vertebrae. These points are more lateral than is advised by American writers (Labat, 1922; White, 1935; Ochsner, 1943), but trial in the necropsy room shows that unless the needles are inserted with considerable obliquity they cannot be made to pass near the sympathetic chain. The needle must establish contact with the side of the vertebral body, and by manipulation it is persuaded to slide tangential to the bone for a further distance of 1 to 2 cm. The point may be felt to pierce the psoas fascia, and when it is in the correct plane a tentative injection of procaine should flow easily; in fact, a drop of fluid on the end of the needle is often sucked in. This indicates, rather surprisingly, that the intra-abdominal pressure is commonly sub-atmospheric.

A careful watch must at all times be kept for the welling of blood or cerebrospinal fluid from the needle. When the needle is correctly positioned a preliminary injection of 2 ml. of 4% procaine is made. As a rule the patient notices a feeling of warmth in the limb before this is detected by the observer, but the sole of the foot should begin to warm up within a few minutes of the injection unless there is severe organic arterial obstruction. Provided there are no symptoms of numbness or paralysis the injection is completed with aqueous phenol. It is important, however, that the whole technique of inserting the needles with accuracy should be mastered by careful practice in many cases before any injections of phenol are undertaken, because failure to place the needle point correctly may cause serious complications.

I believe that a more lasting effect is secured with 10% phenol in water than with a 6% solution, but at the former strength the solution and syringes must be kept warm or precipitation will occur. A total of 10 to 12 ml. is used as a rule, and this is well within the toxic dose, as Binet (1933) often injected 50 ml. of 6% phenol without untoward effects. No evidence of toxic reaction has appeared in this series. The patient remains in the lateral position for 15 minutes to prevent spread of the injection, and can then get up and go home if ambulant.

Results

When the needles have been accurately placed, warming of the corresponding foot has occurred within five minutes except in cases of severe arterial obliteration and when the feet have been very cold at the start. In more than 90% of cases a warm and dry foot has been obtained, and in 60% the effect has been a lasting one, the foot remaining warm and dry for months. In some cases in which the effect has not persisted the injection has been repeated and a good and lasting result obtained. The longest follow-up is now nearly two years, and the signs of sympathetic denervation remain. In two cases in which subsequent sympathectomy by open operation has been carried out there has been evidence neither of further improvement in the blood flow in the foot nor of greater symptomatic relief. Successful injection therefore results in a sympathetic interruption which is lasting and complete enough for practical purposes.

In the two cases in which sympathectomy was performed after phenol injection of the lumbar chain the interval in one was two days and in the other seven days. In both there was oedema of the tissues surrounding the chain—more pronounced in the earlier case—and some opacity of the sheath over the psoas muscle. The sympathetic chains looked swollen and their rami were easily broken. Histological examination of the chains revealed that the majority of the ganglion cells had lost their nuclei and were degenerating. A small piece taken from the anterior surface of the psoas major muscle showed some degeneration of the superficial fibres. A third patient, operated on five months after a phenol injection, had a fair amount of fibrosis in the vicinity of the sympathetic chain, and this made sympathectomy rather more difficult than usual. These observations show that phenol destroys the ganglion cells of the sympathetic chain and thereby produces the same effect as sympathectomy by open operation, and, further, that it causes little damage to surrounding structures.

Complications have been few, consisting for the most part of some irritation of the genito-femoral nerve. This develops in about 10% of cases and is manifest by hyperaesthesia in the groin, not often severe enough to cause great discomfort and lasting as a rule about three weeks. Only once has any more serious complication developed, and that was in an early case: an obese woman who developed signs of a low spinal analgesia lasting three hours and a weakness of the quadriceps on the injected side lasting three months. The needle was here incorrectly placed and the injection must have entered an intervertebral foramen. There should be no risk of such a complication if a 12-cm. needle is used and is inserted for its full length in obese patients.

A variety of conditions have been treated by "chemical sympathectomy," with the following results.

Hyperidrosis

One severe case affecting the feet was injected in October, 1947, with an immediate and dramatic cure which has remained complete. This demonstrates well the efficacy of phenol in producing a lasting interruption of sympathetic activity.

Erythrocyanosis and Perniosis

Six cases of cold blue legs with painful nodules of fat necrosis and, in some, chronic ulceration were treated with lasting benefit in all but one. Similar relief has been provided in two cases of severe chilblains.

Arteriosclerosis

Twenty-three patients have been treated for intermittent claudication, and the majority of these have stated that they benefited, some considerably. A few have had no benefit, but injection is always worth a trial, since there is a good chance that it will help the patient and the risk of harm is negligible.

The main field for sympathetic interruption is in the severer degrees of organic arterial occlusion due to arteriosclerosis with thrombosis in the arteries or, in younger men, occasionally to thrombo-angiitis obliterans. Severe ischaemia is indicated by pronounced colour changes between dependent and elevated positions of the leg and also by pain in the foot, which is worse in bed, and which, by interfering with sleep, rapidly exhausts the patient. This unhappy state can be greatly changed for the better by sympathectomy; much symptomatic relief is provided, and the risks of gangrene are reduced (Telford, 1944; Telford and Simmons, 1946). Chemical interruption by phenol injection has now been used in 65 such cases. It has given profound and lasting relief from rest pain in half of these and considerable relief in nearly all the remainder (Table I).

TABLE I.—*Results of Chemical Sympathectomy with Phenol in 86 Cases of Arteriosclerosis of the Lower Limbs*

	Relieved	Improved	Unchanged	Total
Pain	32	27	6	65
Claudication	2	21	13	36
Gangrene of toe ..	13	6	4	23
Ulceration	18	7	4	29

Pain due to inflammation in the neighbourhood of a gangrenous or infected part is not, however, relieved by this treatment or by sympathectomy. Phenol injections have greatly improved the precarious circulation in the foot, and in several cases with gangrene of one toe healing has been achieved with loss only of the affected digit. Patches of gangrene on the heel and chronic ulcers on the outside of the leg have likewise healed, with preservation of the limb. Patients have been very grateful for the relief afforded, and I have no doubt that the method merits a high place in the treatment of arteriosclerotic ischaemia in patients too old or otherwise unsuitable for open sympathectomy, and in those in whom the impairment of the blood flow is not advanced enough to justify the disturbance of an open operation.

Some of the arteriosclerotic cases have been complicated by diabetes mellitus and yet they have had good results. One woman with gangrene of both middle toes, with severe rest pain and intermittent claudication at 30 yards (27.4 metres), had one side injected, with resulting complete relief of pain in the ipsilateral foot and rapid healing of the gangrenous area. The patch on the other foot continued to spread and cause pain until that side was injected, after which rapid healing occurred. She was seen 18 months later and was symptom-free, with warm, dry, well-nourished feet and no claudication.

Venous Insufficiency

Fifty-eight cases of old white leg and similar deep-vein thrombosis have been treated by phenol injection with benefit to the patient in all but a few instances (Table II). After injection patients have reported that there is less aching and tiredness in the leg, and the warm foot is often much appreciated. In some the swelling has been reduced, but this is by no means a constant sequel. The explanation of this improvement lies partly in the removal of venous spasm, with a resulting fall in venous pressure, and partly in the improved nutrition of the capillary walls, with reduced transudation into the tissues.

TABLE II.—*Results in 58 Cases of Chronic Venous Insufficiency of the Lower Limbs*

	Relieved	Improved	Unchanged	Total
Ulcer	19	26	3	48
Swelling	6	16	28	50
Pain	24	19	3	46

When chronic ulceration has been present, often for many years, the injection has been followed by increased vascularity of the ulcer base, and healing has occurred in 40% of cases, although the patients remained ambulant and wore only tulle-gras and "viscopaste" dressings, well supported by crêpe bandages. In some cases supportive treatment alone had been tried for many weeks without effect. Any patient in whom a chronic ulcer of the leg due to venous insufficiency is associated with a cold and damp foot (evidence of sympathetic overactivity) now has a chemical sympathectomy as part of the treatment.

Conclusions

Sympathetic interruption by the injection of aqueous phenol has much to recommend it. Compared with open operation it is a relatively minor ordeal for the patient, necessitating no rest in bed (most cases have been treated as out-patients). Sufferers from vascular disorders will much more readily submit to this than to the major operation of open sympathectomy, and the treatment can be employed in cases in which operation is considered unjustifiable because of the age and general condition of the patient or because the chances of improvement are insufficient—e.g., in claudication and chronic ulceration of the leg.

The injection results in destruction of the ganglion cells, with a consequent interruption of sympathetic activity which can persist for two years at least. It is likely that some sympathetic activity will return in most cases, as indeed happens after open operation (Haxton, 1947b); but the method has the merit, denied to operation, that it can be easily and rapidly repeated if necessary. Complications are slight as a rule, and apparently much less troublesome than those following alcohol injections.

It must be strongly emphasized, however, that this method should be employed only by those who have had much experience with paravertebral injection of the sympathetic chain with local analgesics, since injection of phenol into the theca or a blood vessel would probably have serious consequences. In competent hands the method is a safe one, but the untried and untrained operator could easily cause disaster.

The sum total of suffering saved by this simple treatment has been very large, and patients have been extremely grateful for the relief provided, particularly since their pain and disablement have often been of long duration and many other treatments have been tried without benefit.

Summary

Six or ten per cent. phenol in aqueous solution has been used for paravertebral injection of the lumbar sympathetic chain in 200 cases. It destroys the ganglion cells and produces a lasting sympathetic interruption. Favourable results have been obtained in a variety of circulatory disorders, and complications have been few.

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EOSINOPHILIC XANTHOMATOUS GRANULOMA WITH HONEYCOMB LUNGS

BY

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[WITH PHOTOGRAVURE PLATE]

The precise nature of the Hand–Schüller–Christian syndrome is unknown. Originally it was thought that the various pathological changes were specific, and that they were due to abnormal intracellular lipoid metabolism (Thannhauser, 1940). More recently it has been realized that the disease is probably a phase in a generalized disorder of the reticulo-endothelial system, and that it has certain features in common with eosinophilic granuloma of bone. The following case is reported as an example of the transition between these two diseases, and because, in addition to the recognized bony and pituitary manifestations, it shows pulmonary infiltration and polycystic, or honeycomb, lungs. So far as is known, no similar case has been reported from this country, and the occurrence of the disease in a subject of the patient's age is unique.

Case History

A boot-repairer aged 56 was admitted in September, 1948. In 1942 he had begun to notice breathlessness on exertion, and this symptom progressed slowly until his admission. In 1942 a radiograph of the chest showed diffuse pulmonary shadows, and he was treated for a short time in a sanatorium. A single specimen of sputum was alleged to contain tubercle bacilli, but this finding was not confirmed. In 1944 he had a fracture of the right femur, which occurred without local injury whilst he was sawing wood. Radiographs at this time showed a cyst of the femur at the site of fracture, but the fracture united in four months and no further investigations were undertaken. Nine months before admission there was a return of pain over the old fracture. In February, 1948, he suddenly began to suffer from excessive thirst and, soon after, from the passage of large quantities of urine. His thirst was such that he would often drink 20 pints (11.36 litres) of fluid daily. These symptoms were partially controlled by a proprietary pituitary snuff. Before the onset of these symptoms he had suffered from no serious illness. One of his sisters had died from pulmonary tuberculosis.

On examination he was seen to be a thin, normally proportioned man. There was no rash or abnormal pigmentation, and hair distribution was normal. Scattered rhonchi were heard over both lungs. The heart was normal; the blood pressure was 120/88. The liver and spleen were not palpable. A thickening of the right femur was palpable over the site of the old fracture. The nervous system was normal. There was no exophthalmos or any lymph-node enlargement.

Investigations.—A blood count showed Hb, 104%; red cells, 4,700,000; white cells, 10,000 (eosinophils 1%); sedimentation rate, 32 mm. in 1 hour (Westergren). Plasma proteins, total 7.8 g. per 100 ml. (albumin 5.6 g., globulin 2.2 g.). Serum cholesterol, 235 mg. per 100 ml. Serum calcium, 10.1 mg. per 100 ml. Serum alkaline phosphatase, 12 K.-A. units. The Wassermann reaction was negative. Vital capacity, 2,850 ml. (63% of normal). The hypertonic saline infusion test (Carter and Robbins, 1947) confirmed the presence of true diabetes insipidus.

Radiological examination showed a cystic area in the right femur immediately below the united fracture (Plate, Fig. 1). There was a generalized reticulation associated with miliary mottling through both lung fields (Fig. 2). The reticulation formed small annular shadows about 0.5 cm. in diameter. Tomography confirmed the presence of small cystic areas in the lungs. There was no enlargement of the mediastinal glands. The skull showed irregular translucencies resembling exaggerated venous channels rather than lipoid deposits. The pituitary fossa was normal. The remainder of the skeleton was normal.

Biopsy of the right femoral cyst was made on material obtained from a small incision on the outer side of the thigh. Histologically the sections showed vascular granulation tissue with a cellular exudate. The cells were almost all eosinophilic granulocytes, but some lymphocytes and large mononuclear cells were present. No foam cells or lipoid-containing macrophages were seen. The appearances were typical of eosinophilic granuloma of bone.

Treatment.—The diabetes insipidus was controlled by the injection of 10 units (0.5 ml.) of "pitressin tannate" once or twice daily. In November, 1948, a course of deep *x*-ray therapy was given to the right femur. There was complete relief of pain in the leg after the third day of treatment. In December, 1948, deep *x*-ray therapy was given to the pituitary fossa and then to the lungs. This produced no improvement in symptoms. The patient was last seen in March, 1949, when he stated that there had been no change in his breathlessness, and the dose of pitressin required to control the diabetes insipidus was the same. Radiographs of the chest and femur showed no change two and a half months after completion of radiotherapy.

Discussion

The term "eosinophilic granuloma of bone" was first used by Lichtenstein and Jaffe (1940) to denote a localized granulomatous condition of bone containing large numbers of eosinophilic granulocytes and giving rise to areas of cystic rarefaction. Otani and Ehrlich (1940) described similar cases earlier in the same year under the title of "solitary granuloma of bone." They found lipophages in biopsy material from one of their cases, but dismissed the possibility that the bony lesions were local manifestations of Hand–Schüller–Christian disease on the grounds that none of their seven cases showed evidence of generalized disease.

Previously, however, Fraser (1935) had reported four cases of the same condition as "skeletal lipoid granulomatosis" and had described the pathological changes as taking place in three stages—namely, endothelial-cell proliferation, eosinophilic infiltration, and lipoid storage. More recently it has become apparent that the local bony granulomata may be merely a part of a generalized disorder affecting the skeleton and viscera, and that other generalized reticuloses—namely, the Hand–Schüller–Christian disease and the acute reticulosis of infancy sometimes called the Letterer–Siwe disease (Abt and Denenholz, 1936)—may give rise to bony changes radiologically and histologically identical with those of eosinophilic granuloma. For these reasons it has been postulated that eosinophilic granuloma, Hand–Schüller–Christian disease, and Letterer–Siwe disease are all variants of a common pathological disorder (Wallgren, 1940; Farber, 1941; Mallory, 1942; Jaffe and Lichtenstein, 1944). Thus Mallory (1942) found all grades of transition between the three disorders and concluded that in infancy the disease was manifest as the rapidly fatal Letterer–Siwe disease, later in childhood as the Hand–Schüller–Christian disease, and in older children or adults as eosinophilic granuloma.

Jaffe and Lichtenstein (1944) considered that the three disorders "represented a peculiar inflammatory reaction to some, as yet, unknown agent of infection," the distinctive histological features in a given case depending on the duration of the disease. In their opinion the presence of fibrosis and lipoid-containing macrophages is merely indicative of chronicity. The increasing number of recorded cases which do not fall accurately into any one category, but which show features of all three diseases, has fully confirmed this view. It seems correct to regard eosinophilic granuloma as being a reticulosis with bony localization rather than a specific disease of bone.

As it is now accepted that these disorders are but phases of the same disease, it would be an advantage to have a single name to embrace the important features of all three. To avoid confusion in terminology Thannhauser (1947) suggested the name of "eosinophilic xanthomatous granuloma" as being descriptive of the main histological features. Until further knowledge is forthcoming on the aetiology of the disease this name should be adopted for the type of case described in this paper. The present case shows evidence of pulmonary, pituitary, and bony disease, and it is to be assumed that all three organs are affected by the same pathological process. The biopsy material from the bone showed granulation tissue and eosinophilic infiltration, and although lipophages were absent from this section it is probable, by analogy with other reported cases, that they may exist elsewhere.

That pulmonary infiltration occurs in eosinophilic xanthomatous granuloma has been recognized since Rowland (1928) described the case of a child aged 2 years who died from pulmonary fibrosis secondary to xanthomatosis. Since then many cases have been reported, and the recorded cases have been reviewed by Thannhauser (1940), Versiani *et al.* (1944), Weinstein *et al.* (1947), Ponseti (1948), Oswald and Parkinson (1949), and Schafer (1949). Oswald and Parkinson reported a case in which the granuloma gave rise to diffuse small cysts throughout both lungs, and they were able to find three similar cases in the literature. A similar case was reported by Schafer (1949). The case reported here shows the characteristic radiological changes of honeycomb lungs and is a further example of cystic pulmonary changes occurring in a more chronic phase of the disorder.

To clarify the protean manifestations of this disease it is suggested that eosinophilic xanthomatous granuloma should be regarded as a generalized disease of unknown aetiology, occurring in an acute or chronic form. In the acute variety, which occurs in infancy and early childhood, there is progressive infiltration of the skin, bones, lymph nodes, and viscera, leading to early death. The chronic variety, occurring in older children and adults, may present in a complete or an incomplete form. In the complete form there is pituitary, bony, and pulmonary disease, with possibly other visceral manifestations. In the incomplete forms, which are not uncommon, pulmonary, pituitary, and bony lesions occur either singly or in any combination. Thus, when the bony symptoms predominate the disease will be regarded as "eosinophilic granuloma of bone," and when the pituitary alone is affected it presents as diabetes insipidus.

It is the relation of the chronic form of this disease to pulmonary disorders that is particularly emphasized, for the possibility that lung fibrosis and cyst formation may be the sole manifestation of eosinophilic xanthomatous granuloma must be considered. It seems likely that such cases will arise, and confirmation of this concept is to be found in the association of pituitary disorders, transient or permanent, with honeycomb lungs (Oswald and Parkinson, 1949). Pathological evidence on this point is difficult to obtain, as in the chronic phase of the disease fibrosis obscures the histological picture. Further histological studies on this subject will be published elsewhere (Cunningham and Parkinson, in the press).

The response to irradiation therapy in eosinophilic xanthomatous granuloma is variable. In most instances the bony lesions respond symptomatically, and sometimes there is radiological improvement. The effect of irradiation on the pituitary and pulmonary disease is occasionally beneficial but usually without effect (Currens and Popp, 1943; Weinstein *et al.*, 1947; Ponseti, 1948). The present case had complete relief of pain in the femur, but the diabetes insipidus and the respiratory symptoms were unaffected; there were no radiological changes following treatment.

A final point of interest in this case is the age of the patient. The oldest case previously reported was that of a man aged 50 (Versiani *et al.*, 1944).

Summary

A case of eosinophilic granuloma of bone in a man aged 56 is described. The patient also had diabetes insipidus and honeycomb lungs.

Irradiation therapy relieved the pain of the bony lesion but did not affect the pituitary or pulmonary disease.

The name "eosinophilic xanthomatous granuloma" should be used to include the three diseases commonly known as the Hand–Schüller–Christian disease, Letterer–Siwe disease, and eosinophilic granuloma of bone.

The occurrence of pulmonary manifestations in this disease is discussed.

I wish to thank Dr. Neville Oswald for permission to publish this case, and Mr. Norman K. Harrison, of the Department of Medical Photography, St. Bartholomew's Hospital, for the photographs.

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ACUTE PNEUMONITIS IN A BERYLLIUM-WORKER

BY

G. RIDDELL ROYSTON, M.D., M.R.C.P., D.C.H.

[WITH PHOTOGRAVURE PLATE]

The following case of acute bronchiolo-alveolitis is thought to be due to working in an atmosphere containing beryllium dust. It is believed to be the first acute case to be reported in this country.

Beryllium was discovered in 1797 by Vauquelin, who called it glucinum, owing to the sweet taste of its salts. It is a brittle steel-grey metal that is soluble in acids, and occurs chiefly as beryl, the double silicate of beryllium and aluminium ($Be_3Al_2(SiO_3)_6$). Phenacite (Be_2SiO_4) and chrysoberyl ($Be_2Si_2O_4$) also occur.

During the 1939–45 war beryllium was used in increasing quantities as an important component of certain alloys and for the production of phosphors for fluorescent lighting and gas mantles. The exact compositions of fluorescent mixtures for the manufacture of strip lighting are trade secrets, but they usually contain varying proportions of beryllium, zinc, manganese, and silica.

FIG. 1.—Case 1. Before lumbo-dorsal sympathectomy. Considerable cardiac enlargement and pulmonary engorgement.

FIG. 2.—Case 1. Two months after sympathectomy. Heart size has decreased and there is no pulmonary engorgement.

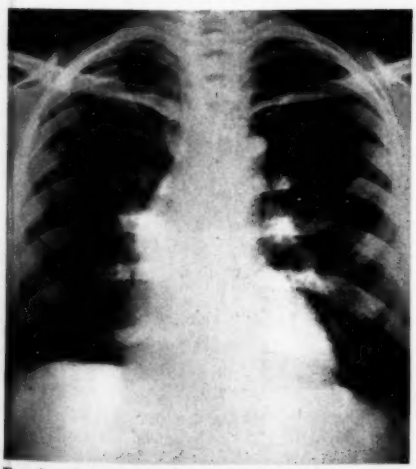

FIG. 3.—Case 1. Eighteen months after sympathectomy. Heart still smaller than before operation, and still no pulmonary engorgement.

FIG. 4.—Case 5. Malignant hypertension. Left fundus before sympathectomy; showing papilloedema and numerous haemorrhages.

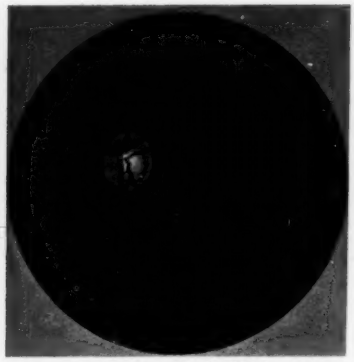

FIG. 5.—Case 5. Left fundus seven months after sympathectomy. Normal appearance.

FIG. 6.—Case 6. Malignant hypertension. Right fundus before sympathectomy; papilloedema, a haemorrhage, numerous exudates, and considerable arterial spasm.

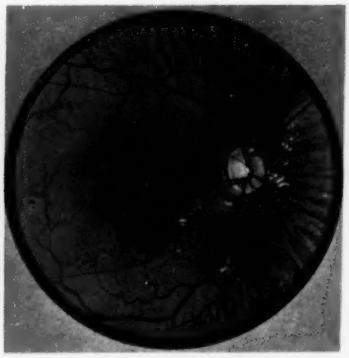

FIG. 7.—Case 6. Right fundus nine months after sympathectomy. Papilloedema has disappeared, and only a few small old exudates remain. Some areas of retinal degeneration and some branches of retinal artery in spasm.

FIG. 1.—Cystic rarefaction in right femur below old fracture.

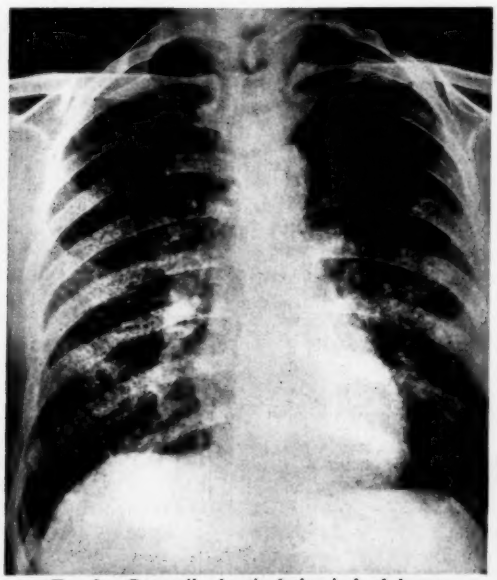

FIG. 2.—Generalized reticulation in both lungs.

G. RIDDELL ROYSTON: ACUTE PNEUMONITIS IN A BERYLLIUM-WORKER

FIG. 1.—Soft mottling. (June 27, 1947.)

FIG. 2.—Apparently typical miliary tuberculosis. (July 11, 1947.)

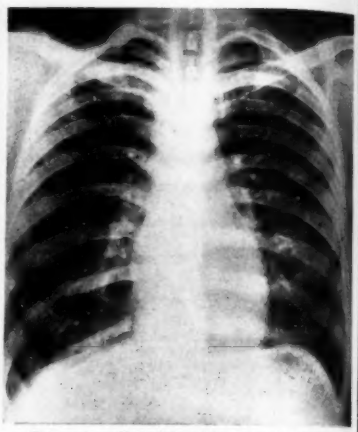

FIG. 3.—Considerable resolution. (Aug. 7, 1947.)

F. D. BEDDARD: ARTERIOVENOUS FISTULA OF THE LUNG

FIG. 1.—Postero-anterior view.

FIG. 2.—Tomogram.

FIG. 3.—Bronchogram.

FIG. 4.—Angiogram.

K. DAMODARAN: INFECTIVE HEPATITIS AND PORTAL CIRRHOSIS

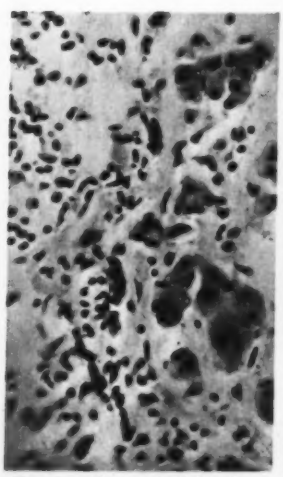

FIG. 1.—Liver × 300. Marked cellular infiltration. Second week.

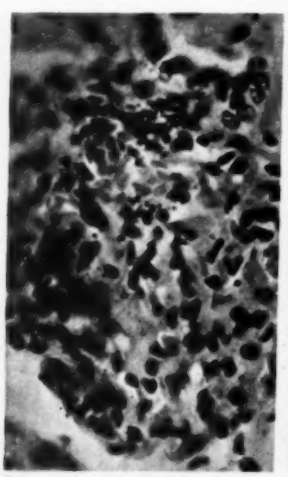

FIG. 2.—Glomerulus × 400. Showing pigment granules. Second week.

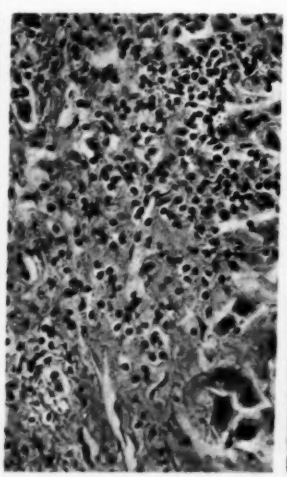

FIG. 3.—Liver × 250. Post-arsenical hepatitis. Cirrhosis and round-cell infiltration.

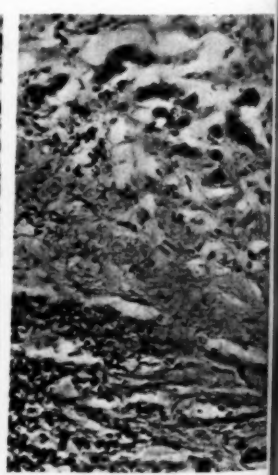

FIG. 4.—Liver × 240. Portal cirrhosis, showing round-cell infiltration.

Illustrations printed in Collogravure by HARRISON & SONS, LTD., Printers to His Majesty The King, London, Hayes (Middx.) and High Wycombe.

Case Record

A man aged 30 had been working in the laboratory of a radio factory for five weeks, when he developed shortness of breath on exertion and a slight unproductive cough. Dyspnoea became progressively worse, and three weeks later, on June 27, 1947, he attended hospital as an out-patient. There was no history of a haemoptysis or any symptoms of nasopharyngitis. His appetite was good, his bowels normal, and there had been no night sweats or unusual taste in the mouth. He felt perfectly fit and well except for his dyspnoea, though he thought he might have lost a little weight. His main disability was his dyspnoea on effort that interfered with his hurrying for a bus.

His occupational history revealed that from 1936 to 1939 he worked in a rolling mills, rolling zinc sheeting. There were no fumes. From 1939 to 1946 he was in the Army and served in North Africa and Italy, having what sounded like an attack of infective hepatitis on returning to this country in 1946 and two attacks of malaria. He then worked for a year on a guillotine machine in a rolling mills, after which he started work in a laboratory of the radio factory. There he spent about two hours of each working day mixing the powders used for coating the insides of the tubes used for strip lighting. I was unable to determine the exact composition of this powder, as it was a trade secret, but beryllium and zinc were definite constituents. The actual mixing was done by hand by stirring the dry powders in a large bowl without a lid and without the aid of extractor fans or the wearing of masks. The atmosphere was heavily laden with dust during the mixing process. The dust settled in the laboratory, and during the day was no doubt often disturbed, becoming air-borne.

On examination on June 27 he looked well built and was without any cyanosis or finger-clubbing. He had an unproductive cough and became markedly dyspnoeic with the effort of undressing. Respiratory movements were good, and abnormal physical signs were confined to the lungs, where rhonchi and medium rales could be heard scattered throughout. These added sounds were not more pronounced at the bases. The heart appeared normal, and the blood pressure was 110/65.

As his dyspnoea was out of all proportion to the physical findings he was admitted on July 4 as a suspected case of tuberculosis. His subsequent progress was as follows. From July 4 until his discharge on Aug. 16 he remained afebrile with a normal pulse rate. By July 12 his symptoms had practically disappeared and added sounds could no longer be heard in the lungs. The erythrocyte sedimentation rate (Wintrobe), which on admission was 22 mm. in one hour, remained unchanged. Three specimens of fasting-stomach contents and one specimen of lung-juice were all negative for tubercle bacilli both on direct examination and on culture. Seven specimens of sputum were similarly negative. A blood count on July 7 showed 104% haemoglobin (Haldane) and 8,300 white cells (4,814 polymorphonuclears, 2,656 lymphocytes, 332 monocytes, and 498 eosinophils). Cold agglutinins were present up to a dilution of 1 in 16 on July 10.

The *x*-ray appearances were of particular interest. The first picture (Plate, Fig. 1), taken on June 27, showed an indeterminate soft mottling, which in some areas was almost millet-seed. It was distributed all over the lungs, being especially marked in the lower zones and the axillary part of the right upper zone. It suggested an early miliary tuberculosis or possibly a sarcoid. The second picture (Fig. 2), taken a fortnight later, seemed to be typical of miliary tuberculosis. The appearance was unchanged on July 22, but a further picture on Aug. 7 (Fig. 3) showed considerable resolution. On Sept. 10 almost complete resolution had occurred without any evidence of fibrosis, and it became difficult to imagine that the condition was tuberculous. A final radiograph on March 5, 1948, was perfectly normal and showed no trace of the original changes.

Clinical Picture

Beryllium has on several occasions been blamed for causing illness. Two of the first accounts were by Zamakhovskaya (1934) and Martinskovsky and Syroechkovsky (1934), both of whom were quoted by Gelman (1936). They considered toxicity could be attributed to beryllium fluorides, of which the oxyfluoride was particularly toxic. Gelman, discussing poisoning due to the vapours arising from the foundry method of extracting beryllium, considered that their special physical condition (great dispersion) explained their characteristic toxic effect, and that the tissue damage was due to the fluorine being separated from the oxyfluoride at the level of the bronchioles and the alveoli.

Two main types of respiratory disease have been described—the acute and the delayed. In the acute form Van Ordstrand *et al.* (1943) described three cases which they called chemical pneumonia, occurring in workers exposed to beryllium. The exact compounds were not stated, but the fluorides were specifically excluded. They considered the aetiology unknown, having seen a similar case in a worker in a rayon factory where there had been no exposure to beryllium. These cases all presented insidiously, with increasing dyspnoea on exertion, a dry cough, low-grade fever with shallow respirations, some cyanosis, and fine rales throughout the lower halves of both lungs.

The onset of the symptoms preceded the *x*-ray changes by three weeks or more. The *x*-ray changes started with diffuse haziness of both lungs, progressing to soft irregular areas of infiltration accompanied by increase in the peribronchial markings. This was followed by absorption of the diffuse infiltration and the appearance of a small nodular infiltration which cleared completely within one to two months. Six additional patients from the same beryllium plant were all found to have identical radiological changes.

Van Ordstrand *et al.* (1945) had 128 cases with respiratory manifestations over a period of four years; 38 of these, including five fatalities, were described as chemical pneumonitis. The onset of symptoms was insidious, with cough and occasional blood-stained sputum, followed by dyspnoea, an abnormal taste in the mouth, anorexia, and some loss of weight and increasing fatigue. Of the signs, cyanosis was usual, with rapid pulse, reduced vital capacity, and fine rales scattered throughout the lungs. *X*-ray changes were not usually present until two to three weeks after the onset of the disease and were as already described (Van Ordstrand *et al.*, 1943). They cleared in from one to four months, and it is emphasized that as a rule this was before complete subsidence of the symptoms or disappearance of the physical signs, though in one case they persisted for a further two months. In these cases they considered the severity to be proportional to the degree of exposure to chemical irritation by dust and fumes. Ninety had chemical nasopharyngitis and/or tracheobronchitis. This latter type of illness developed predominantly among furnace-workers.

The laboratory investigations were unremarkable. The erythrocyte sedimentation rates were essentially normal, and blood counts and blood chemistry were also normal. Tubercle bacilli have not been found (Van Ordstrand *et al.*, 1945). Reports on the morbid anatomy consist of five cases described as a typical pneumonitis (Van Ordstrand *et al.*, 1945). The salient features appear to be grossly heavy lungs (1,100–1,380 g.) with diffuse pulmonary oedema and haemorrhagic extravasation, considerable plasma-cell infiltration with a relative absence of polymorphonuclear cells, and some evidence of organization.

Treatment is symptomatic, with both penicillin and the sulphonamides being useless (Van Ordstrand *et al.*, 1945). Complete bed rest is regarded as essential, and no work should be permitted until all signs and symptoms of the disease have disappeared and the *x*-ray appearance of the lungs has returned to normal.

In the delayed form of the disease 17 cases of delayed chemical pneumonia were reported by Hardy and Tabershaw (1946) and Hardy (1947). Four of these came on while the patients were still exposed to beryllium after periods of exposure varying from eight months to five years. Two of these died. The remaining 13, four of whom died, developed symptoms from three months to three years after cessation of exposure to beryllium. Of the survivors only one is regarded as cured. Pascucci (1948), in his follow-up of the 11 survivors, found 30% dead and the same proportion *in statu quo*. The interval between exposure and the onset of symptoms may be as great as six years (Wilson, 1948). Agate (1948) has described a case in which the chest radiograph at first suggested miliary tuberculosis.

Discussion

On admission and for the first few weeks of observation this case was considered to be miliary tuberculosis; and, though the patient was afebrile, felt remarkably fit and well, and had only a slightly raised erythrocyte sedimentation rate, the *x*-ray film of the lungs on July 7 certainly seemed to confirm the diagnosis. However, the subsequent course of the illness as shown by serial radiographs rendered the diagnosis of miliary tuberculosis unlikely. Not only had the lungs cleared radiologically in eight weeks without streptomycin treatment but they had cleared completely without any residual fibrosis.

Eosinophilic lung is unlikely with only 500 eosinophils per c.mm. in the white count and the absence of bronchial spasm.

Ascariasis remained a possibility, but stools were free from ova when examined one year later, at which time they might well have been expected to be positive had the original infection been due to roundworm larval migration.

Miliary changes of similar distribution to those of miliary tuberculosis can occur in sarcoidosis, but though they may clear completely they take three to ten years to do it. They also tend to fluctuate over a period of months or years and are often accompanied by changes in other structures.

Pneumoconiosis is ruled out by the occupational history, the mycoses by the examination of the sputum, and carcinomatosis by the recovery of the patient.

It is of interest that the *x*-ray changes simulating miliary tuberculosis have not previously been described in the acute form of the disease but have been seen in the delayed type. The symptoms antedated the *x*-ray changes by about three weeks, but they cleared completely after eight days, at which time the *x*-ray miliary appearance was at its maximum. The *x*-ray changes subsequently persisted for a further two months in spite of the apparent well-being of the patient.

It seems possible that this man's illness was due to his contact with beryllium.

Summary

A case presenting clinically as a bronchiolitis occurring in a man handling fluorescent powders containing beryllium is described.

The *x*-ray changes were miliary in character and completely cleared in eight weeks without residual fibrosis.

The patient made a complete recovery.

The literature is briefly reviewed.

I am indebted to Dr. H. Joules, at whose suggestion the diagnosis was made, to Dr. T. R. Riley for his reports on the earlier *x*-ray films, and to Dr. G. Doel for his reports on the later ones. I wish also to thank Dr. C. A. Birch for permission to publish this case.

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INFECTIVE HEPATITIS AND PORTAL CIRRHOSIS

BY

K. DAMODARAN, M.B., B.S.

Major, R.A.M.C.

[WITH PHOTOGRAVURE PLATE]

This paper is based on the clinical findings in 550 cases of infective hepatitis and necropsy findings in 22 fatal cases in different stages of hepatitis occurring in various theatres of war. The clinical types, signs, symptoms, pathology, and complications were discussed in two previous articles (Damodaran and Hartfall, 1944; Damodaran, 1948). The present paper is mainly concerned with the course of infective hepatitis and its sequelae.

Infective hepatitis, as already shown, causes a diffuse inflammation of the hepatic cells, varying from mild cloudy swelling to frank necrosis. Complete resolution takes place in a few weeks in the majority of cases. In a small proportion, however, fibrous-tissue reaction occurs in the portal spaces, producing various degrees of cirrhosis. The hepatic cells show different stages of necrosis, which is more advanced in the central zones of the lobules. This centrilobular zonal necrosis becomes apparent only at the late stage of the disease, approximately at the end of the second week. Round-cell infiltration is pronounced in the early stages, especially in the portal tracts. In later stages cellular infiltration diminishes and is almost confined to the periphery of the lobules, unless there has been an acute exacerbation or relapse.

Fig. 1 (Plate) shows the picture of the liver in the second week of the disease. The section was taken from the liver of an Indian soldier who died of fulminating infective hepatitis. Note the intense infiltration by round cells, most marked at the periphery of the lobules. The hepatic cells are in the early stage of necrosis. These changes were seen diffusely throughout the liver. The only other organ affected as seen at necropsy was the kidney. Fig. 2 (Plate) shows the swollen glomerulus with a few bile-pigment granules.

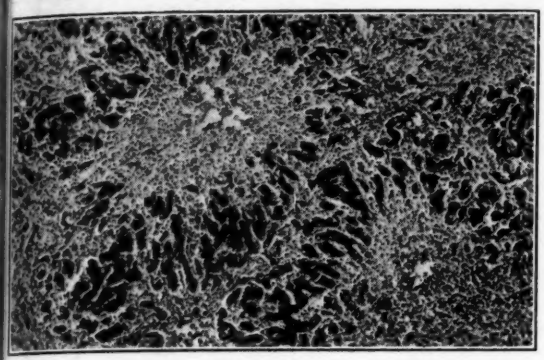


FIG. 5.—Liver ×50. Centrilobular necrosis. Third week.

The accompanying Fig. 5 shows centrilobular necrosis in the third week of the disease. The section was taken from the liver of a British soldier who died at the end of the third week. Cellular infiltration is scanty. The centrilobular necrosis is not uniform throughout the liver. Fig. 6 shows another part of the same liver. Note the advanced necrosis. The lobular architecture of the liver is completely lost. This advanced necrosis corresponded to paler areas of the liver seen macroscopically. Early fibrous-tissue proliferation at the periphery of the lobules is noted in some sections.

As the lobular pattern of the liver is distorted during the course of infective hepatitis fibrous tissue grows irregularly when healing takes place, without preserving the normal lobular architecture. It thus encloses multiple lobules as well as portions of lobules, giving the picture of portal cirrhosis. This was well illustrated in the previous paper (Damodaran, 1948).

Post-arsenical Hepatitis

The effect of hepatotoxic substances like alcohol, arsenic, and gold on infective hepatitis was described in detail by Damodaran and Hartfall (1944). Their observations agree with the findings of Borensztejn (1948), who described 216 cases of hepatitis in a Polish venereal disease treatment centre in Germany in 1946–7; 65% of his cases occurred during the peak months of October, November, and December. This figure exactly fits in with the findings in Malta during the siege. Note the high incidence of the disease during the months of October, November, and December. Unless this epidemiological finding is borne in mind one is likely to ascribe the fall in incidence after December entirely to the various prophylactic measures adopted to combat the disease. Ten of Borensztejn's cases of post-arsenical jaundice occurred so early in the course of treatment that the theory of syringe transmission is ruled out.

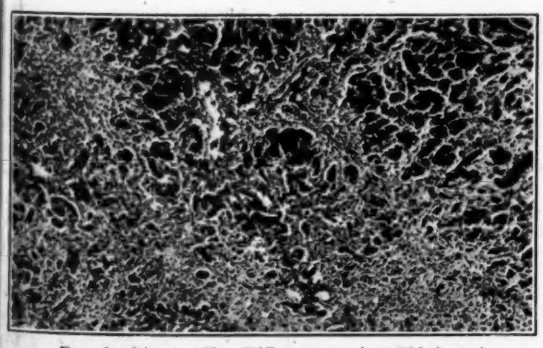


FIG. 6.—Liver ×50. Diffuse necrosis. Third week.

He ascribed them to toxic hepatitis due to arsenic—in other words, arsenic-precipitated jaundice. These cases cannot be attributed to the toxicity of arsenic alone, as the incidence of jaundice is negligible during massive arsenotherapy for syphilis (1,200 mg. of "mapharside" in five days). The most significant finding is the difference in mortality between post-arsenical jaundice and jaundice not treated with arsenic. In the former the mortality was 30.8%, whereas in the latter it was less than 3% in the same clinic.

This illustrates the effect not only of arsenic but of all other similar hepatotoxins on the severity of infective hepatitis if administered during the incubation period, as shown before (Damodaran and Hartfall, 1944).

The histological appearance of the liver in post-arsenical hepatitis is the same as that in infective hepatitis, both in the early and in the late stages. Fig. 7 and Fig. 3 (Plate) show the late sequelae of post-arsenical hepatitis. The sections were taken from the liver of a British soldier who died five years after the initial attack of hepatitis. He developed jaundice after completing five courses of arsenic treatment for syphilis in October, 1943. Penicillin followed by arsenic was given in 1947 for a fresh attack of primary syphilis. Jaundice developed after the tenth injection of

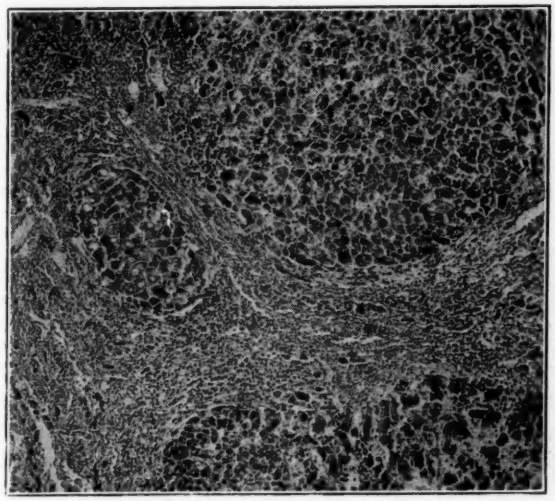


FIG. 7.—Liver ×80. Post-arsenical hepatitis with cirrhosis. Late stage.

arsenic. He was treated in hospital for two and a half months and was discharged after the jaundice had cleared up. Two months later he relapsed without any obvious cause: bilirubin, 14 mg. per 100 ml.; colloidal gold, 555532; thymol turbidity, 12 units; plasma proteins normal. He died a fortnight after admission. Note the marked cirrhosis, the cellular infiltration, and the islet of liver parenchyma enclosed by fibrous tissue.

It seems that in this case the liver never completely recovered from the effects of the first attack of hepatitis in 1943. The second course of arsenic, in 1947, brought about jaundice, which cleared up under treatment. The liver, however, did not recover completely, but progressed to cirrhosis. Hepatic failure gradually set in.

Portal Cirrhosis

A case of hepatitis sine icterus progressing to portal cirrhosis was described in the previous paper (Damodaran, 1948). I came across three similar cases in a military hospital in India in 1946. All these patients were teetotallers

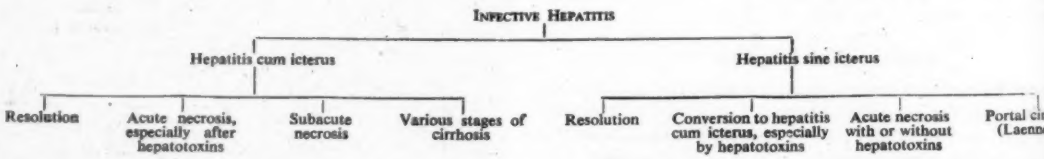
and non-vegetarians—two Hindus and one Moslem. The cases were fully investigated to rule out any other possible diagnosis. They were treated with high protein diet for two to three months, but there was no evidence of any improvement. Two of them were finally invalided out because of portal cirrhosis. The condition of the other patient gradually deteriorated. He developed progressive jaundice and ascites and was tapped a few times. He died in coma due to hepatic failure four months after admission to hospital. Necropsy showed typical portal cirrhosis as illustrated in Fig. 4 (Plate) and Fig. 8. Note the round-cell infiltration in the portal tracts.

These three soldiers had been on normal well-balanced Army diets for two to three years before they developed cirrhosis. A nutritional factor has thus been eliminated. Besides, dietetic treatment had no effect on the course of the disease, though given early enough. Infective hepatitis was prevalent among the Forces at that time. Still, it was possible to doubt whether these cases were really hepatitis sine icterus progressing to cirrhosis: so I decided to investigate whether cirrhosis could be present in an isolated area affected by infective hepatitis. I visited a small village 500 miles away where infective hepatitis was known to be prevalent, and found one case of subacute necrosis, one of infective hepatitis which progressed to portal cirrhosis, and one of portal cirrhosis with ascites. The association of infective hepatitis, subacute necrosis, and portal cirrhosis is not a chance coincidence.

The course of infective hepatitis and its sequelae can be indicated as in the accompanying diagram.

Resolution is the usual result in the vast majority of cases. Acute necrosis occurs in from 0.2 to 1.5% of cases. Subacute necrosis occurs slightly more frequently. It is not possible to estimate what proportion of cases develop cirrhosis.

Jaundice may or may not appear during the course of the disease; or it may appear in the beginning, middle, or towards the end.



Discussion

For a long time the sequelae of infective hepatitis remained obscure because there was no correlation between the clinical and pathological findings. The histological appearance of the liver is so different in various stages of the disease that the pathologist considered these as separate diseases. Acute and subacute necrosis of liver are in fact only fulminating and severe types of infective hepatitis.

The hepatic cells are inflamed diffusely, but consideration of the architecture of the liver lobules shows that the central zones are the most vulnerable part and so naturally suffer most. Though there is a double blood supply, there is only one outlet through the intralobular (central) vein. In the acute stage there is not only round-cell infiltration in the portal tracts but also diapedesis of red blood cells showing congestion. The sinusoids are narrowed owing to swelling of the liver cells, and so the outlet is partly obstructed. The unnamed minute vessels in the diaphragm are opened up as a result, establishing communication between the sinusoids and the right lateral thoracic vein. The latter vein is seen distended in some severe cases. The bile canaliculi are also obstructed owing to the swelling of the cells, and jaundice develops. Cellular infiltration is scanty in the central zones of the lobules because the blood supply is diminished, blood being diverted into newly opened channels.

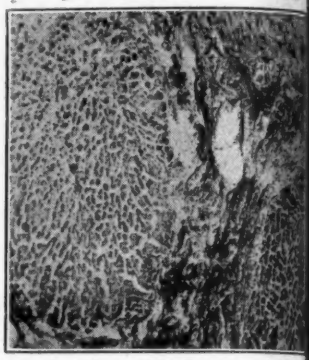


FIG. 8.—Liver ×30. Late stage of hepatitis sine icterus. Portal cirrhosis.

The severity of the disease depends on the diffuseness of the lesion. If all the liver cells are affected the organ will be knocked out early, even before histological changes become apparent. When the liver is so inflamed one can imagine what effect hepatotoxins would have on it. They would not only precipitate jaundice in hepatitis sine icterus but would bring about acute or subacute necrosis as well. A therapeutic dose of arsenic, gold, or carbon tetrachloride would leave the normal liver undamaged but would have a synergistic necrosing effect on the liver already damaged by infective hepatitis. The significance of this would be better realized if we recognized that infective hepatitis could exist without jaundice.

Fatty change is not a prominent feature of the liver in acute infective hepatitis or in the subsequent cirrhosis except in chronic alcoholics. Experimental cirrhosis in animals is accompanied by significant fatty change in the liver. There is no evidence to show that deficiency of proteins and vitamins has any aetiological significance in infective hepatitis and subsequent cirrhosis. The cirrhosis described in African pellagrins by Gillman and Gillman (1945) seems to resemble haemochromatosis rather than classical Laennec's cirrhosis. It is preceded by pronounced fatty change.

The external appearance of the liver may vary at different stages: in the early stage it is smooth; later it appears finely granular; and in the final stage it is grossly nodular and somewhat atrophic.

Liver-function tests are occasionally unreliable in assessing the damage done to the liver. Serum from the patient the section of whose liver is illustrated in Fig. 5 gave normal results for serum colloidal gold, thymol turbidity, Takata-Ara, and serum alkaline phosphatase tests two days before his death and again on the day he died. In the case illustrated in the accompanying Fig. 7 and in Fig 3 (Plate) the tests done were positive before the patient died. The tests in both cases were made in the same laboratory. The severity of the cases could be assessed more accurately by clinical examination alone.

Treatment

In no other disease has the treatment so much changed from time to time, according to the prevailing views on the pathogenesis of the condition, as in infective hepatitis. Dai

purgatives and lacto-vegetarian diet were the basis of treatment in the past, when a mucous plug in the ampulla of Vater and catarrhal inflammation of the bile ducts were thought to be the cause of jaundice. Duodenal intubation and lavage with magnesium sulphate solution were tried for the same reason. After animal experiments deficiency of proteins and vitamins was blamed, patients were put on high protein diet and massive doses of methionine, cystine, and vitamin B complex. Miraculous cures were claimed for protein hydrolysates and plasma transfusion. Equally miraculous cures have resulted from transfusion of glucose-saline. Rapid improvement has also been reported due to direct irrigation of the biliary tract with saline during laparotomy. When good results are claimed for such widely different treatments none of these can be specific. The assessment of the value of any form of treatment is exceedingly difficult owing to the natural tendency of the disease towards spontaneous cure. It is only when large numbers of patients have been treated that inefficacy of certain methods can be proved.

The liver has a marvellous capacity for recovery and regeneration. In the acute stage, when the liver cells are inflamed, rest to the organ is indicated more than anything else. Glucose, liberal fluids, and mild laxatives are beneficial. The diet should be light, low in fat, but otherwise balanced. The patient can leave the bed soon after the urine becomes bile-free.

In venereal disease treatment centres extreme care is essential for the prevention of post-arsenical hepatitis. Besides care in sterilizing syringes and needles, each patient receiving injections should be carefully examined before injection. Malaise, nausea, urobilinogen in urine, a trace of bile, or dark urine are all contraindications to arsenical treatment. If arsenic is given after the urine has turned dark, acute necrosis is likely to result. In relapse cases arsenic should be given up for good.

Once cirrhosis is established there is nothing at our disposal to prevent its progress. All that can be done is to prevent the surviving hepatic cells from degeneration. Restricted activities, well-balanced but low-fat diet, and glucose are helpful. All hepatotoxins should be scrupulously avoided. Ascites should be tapped if there is considerable fluid. Anaemia should be treated with iron and liver extracts. If bleeding occurs vitamin K should be injected. All measures to improve general health should be taken.

Morphine is not advisable even in small doses in cholaemia of acute necrosis and late stages of cirrhosis. Even ¼ gr. (8 mg.) of morphine is likely to cause fatal coma in a severe case. If delirium is present and insomnia is troublesome, 4 dr. (15 g.) of paraldehyde should be given in saline by rectum and repeated as necessary.

Summary

The course of infective hepatitis and its sequelae are described. Post-arsenical hepatitis is discussed. The development of portal cirrhosis is traced from its source—hepatitis sine icterus. The association of infective hepatitis, subacute necrosis, and portal cirrhosis in areas where infective hepatitis is prevalent is not a chance coincidence. A clinico-pathological classification indicating the course and sequelae of infective hepatitis is given. The mechanism of the production of centrilobular necrosis is discussed. The difference between Laennec's cirrhosis and experimental cirrhosis is stressed. The external appearance of the liver in different stages is described. The unreliability of liver-function tests in estimating the severity of infective hepatitis is demonstrated. Treatment is critically surveyed. Photomicrographs to illustrate the picture of the liver in different stages of the disease are given.

I wish to record my indebtedness to Professor S. J. Hartfall for his constant interest and encouragement. I am indebted to Colonel E. Underwood and Colonel D. Murray for permitting this work to be carried out. My thanks are due to Lieutenant-Colonel R. Kempthorne, Captain Krishnaswamy, Captain Bernstock, and Captain Dexter for valuable help. My thanks are also due to Mr. Dodds for the photomicrographs and to Privates Harry Castle and K. A. Pallister for help in procuring records and other material.

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TREATMENT OF ABORTUS FEVER WITH SULPHONAMIDES AND BLOOD TRANSFUSION

BY

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Since the annotation in the *British Medical Journal* (1947, **2**, 700) on the treatment of undulant fever by sulphonamides and blood transfusion two cases have been seen in which this new suggestion could be tried. (These are reported because of the satisfactory response to treatment and because of an interesting complication.)

Case 1

The patient, a youth aged 16, was in perfect health until the beginning of June, 1948, when he began to feel cold and had three attacks of shivering. A week before admission he developed gingivitis. On June 16 he woke up to find that he was blind in the left eye. He had had no pain and did not feel ill. Two days later he was admitted to hospital. His previous history and that of his family were not relevant. He was a farm labourer, spending most of his time with cattle. His employer had also been ill "with something similar," and it was subsequently confirmed that he too had had undulant fever. Bowels and micturition were normal. There was no loss of appetite or weight.

On admission his temperature was 103° F. (39.4° C.), pulse rate 112, and respiratory rate 28. He was flushed and was sweating profusely; nevertheless, he was emphatic that he did not feel ill. Gingivitis was present. His tongue and throat were normal. Blood pressure was 130/70. The cardiovascular, respiratory, and central nervous systems were normal. There was no enlargement of the spleen or liver, but slight enlargement of the cervical, axillary, and inguinal lymph nodes. There were a few macules on the arms and calves. Hess's test was negative. Vision in the right eye was normal except for a refractive error (hypermetropia); the pupil acted on accommodation and to direct light, but the consensual light reflex was absent. The left pupil was larger than the right, and it reacted neither on accommodation nor to direct light, although the consensual light reflex was present. The left eye had an internal strabismus (congenital) and was amblyopic. Ophthalmoscopy showed a recent thrombosis of the central retinal vein, and it was fortunate that it was in the amblyopic eye.

Abortus fever was considered a likely diagnosis for two reasons: the history of working with cattle, and the little discomfort associated with the marked pyrexia and sweating.

Investigations.—A blood count on June 18 showed: haemoglobin, 87% (13.5 g.%); colour index, 0.89; red cells, 4,920,000; white cells, 6,000 (neutrophils 3,600—band forms 720, segmented forms 2,880—lymphocytes 2,280, monocytes 120). An agglutination test on June 18 gave a positive reaction to both *Brucella abortus* and *Br. melitensis* in all dilutions from 1 in 20 to 1 in 5,120. Lumbar puncture on June 19 showed: pressure, 60 mm.; no block; approximately 5.5 ml. of clear colourless fluid; 1 cell per c.mm.; red cells, very scanty—cytology, lymphocytes only seen; protein, 18 mg. per 100 ml.; pandy, no increase; Lange, 100000; Wassermann, negative; chlorides, 700 mg. per 100 ml. A blood culture on June 19, when the temperature was 103.6° F. (39.8° C.), gave a growth of an organism which was morphologically similar to *Br. abortus* and *Br. melitensis*. However, it refused to grow under aerobic conditions, but did so readily with an increased CO_2 tension. This indicated *Br. abortus*. Radiographs of the chest and skull on June 19 were normal. The urine was normal.

Treatment and Progress.—On June 24 he was given 1 pint (570 ml.) of fresh blood and 3 g. of sulphamezathine followed by 2 g. six-hourly. This was continued until July 1—total, 59 g. The pyrexia continued as shown on Chart 1, settling on a lower plane on July 3. A painful small effusion of the left knee developed on June 26 which disappeared four days later. Throughout, he said he never felt ill. The spleen was never palpable. He was discharged apyrexial on July 17 after four weeks in hospital, or six weeks since the onset of the illness. He was seen again on Aug. 21 and Sept. 18, when he was in perfect health. In December he was reported to be still well. The left eye has remained blind.

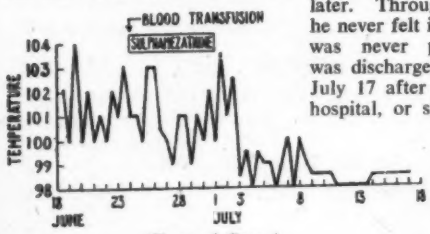

Chart of Case 1

A differential white count on July 2, after sulphonamide, showed: white cells, 4,100 (neutrophils 1,681—band forms 246, segmented forms 1,435—eosinophils 123, lymphocytes 2,091, monocytes 205).

Case 2

A married woman aged 46 was admitted on Jan. 17, 1949, the diagnosis of abortus fever having been made two weeks previously, the agglutination reaction being positive. She complained of pyrexia in the afternoons and evenings, with much sweating—sufficient to cause her to rise and change her night attire. Her previous history was as follows:

In October, 1948 (12 weeks before admission), she had "influenza." Her symptoms were identical with those described above, and she stated she had not felt well since, sweating having occurred on and off. This was evidently the onset. In December (six weeks before admission) the symptoms became worse, occipital headaches and ulcers in the mouth occurring for the first time. She had had a slight macular rash on the body the week before admission. No joint pains occurred. Her previous history and that of her family were not relevant.

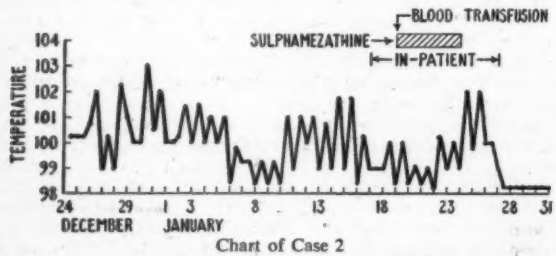

Chart of Case 2

She had lost weight (no details available). The undulant nature of the fever is well shown in Chart 2, kept by her daughter. Both she and her husband worked in a Milk Marketing Board office, but handled only milk return forms. They lived in the country, the milk supply being direct from a farm and not pasteurized. There was no known contact. On examination her general condition was good, with no obvious loss of weight. She was sweating. The temperature was 99° F. (37.2° C.), the pulse rate 100. All systems were normal. The spleen was not palpable and there was no rash.

Investigations.—An agglutination test on Jan. 1 gave a positive reaction in a dilution of 1 in 1,280 to *Br. abortus*. A blood count on Jan. 18 (before transfusion) showed haemoglobin, 93% (14.5 g.%); colour index, 0.95; red cells, 4,920,000; white cells, 4,000 (neutrophils 2,320—band forms 1,240, young forms 40, segmented forms 1,040, eosinophils 80, lymphocytes 1,160, monocytes 440). A blood count on Jan. 27 (after transfusion) showed: haemoglobin 90% (14 g.%); colour index, 1; red cells, 4,510,000; white cells, 5,000 (neutrophils 2,000—band forms 650, segmented forms 1,350—eosinophils 500, lymphocytes, 2,000, monocytes 500). A blood culture on Jan. 17 gave a good growth of *Br. abortus* after seven days' incubation. A fractional test meal showed a low acid curve. This was done as it is remarkable that a milk-borne disease should be only sporadic, and it may be that individual susceptibility depends on failure of this first line of defence. The urine was normal.

Treatment and Progress.—On Jan. 19 she was given a blood transfusion of 1 pint (570 ml.) of fresh blood and 3 g. of sulphamezathine followed by 2 g. six-hourly until Jan. 24—total 47 g.

On Jan. 27, the day she left hospital and eight days after starting treatment, she became apyrexial and has remained so ever since. When seen on Feb. 26 and March 25 (two months' follow-up) she was in normal health.

Discussion

Two cases of abortus fever (one having a rare complication) successfully treated with sulphonamides and blood transfusion is added to the two of Holmes and Hughes (1948). In Case 1 sulphamezathine and a single transfusion of 1 pint of fresh blood were used, beginning three weeks from the onset of the disease. Three weeks later the patient was discharged cured, and remained so. Holmes and Hughes used sulphadiazine and three small transfusions; their cases were treated eight weeks and six weeks from the onset, and were discharged after two weeks' treatment. This is encouraging in a disease which commonly has a long duration (Price gives an average length of three to four months, while Saville mentions three to six months). In the literature no reference to thrombosis of the central retinal vein in abortus fever has been found.

Although two swallows do not make a summer, and this treatment of abortus fever has been criticized by Professor Debono (1949), it seems only reasonable to conclude that the strain of *Br. abortus* met with in this country is sensitive to such treatment. The results certainly justify further trial.

My thanks are due to Dr. J. O. Terry, under whose care the patients were, and to Mr. I. Lloyd-Johnstone for his report upon the condition of the eyes in Case 1.

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The annual general meeting of the Society for Relief of Widows and Orphans of Medical Men was held on June 1. Dr. Alison Glover, a vice-president, was in the chair. The annual report and financial statement for 1948 was approved. At present the membership of the society is 250. Forty-six widows are in receipt of grants, and the total sum distributed during the year was £4,545. Income exceeded expenditure by £802 9s. 2d. It was decided that by-law 41 should be amended so that any widow whose annual income does not exceed £150 will be eligible for grants, as compared with an annual income of £125 as at present. The meeting concluded by passing a vote of thanks to Sir Robert A. Young, the president, for his services during the past year. Membership of the society is open to any practitioner living within a 20-miles radius of Charing Cross, and further details may be obtained on application to the secretary of the society, 11, Chandos Street, W.1.

TREATMENT OF HERPES ZOSTER WITH LIVER EXTRACT

BY

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Although the eruption of herpes zoster may appear without discomfort, the pain associated with the condition is sometimes considerable; and post-herpetic neuralgia may occur with such severity and persistence that, as Osler (1898) recorded, it has been known to drive a patient to commit suicide. The treatments recommended have been legion, including iron, arsenic, strychnine, gelsemium, valerian, and aconite, as well as the customary analgesics; freezing, liniments, diathermy, and the injection of distilled water beneath the skin have also been used.

Dickie (1946) relieved herpetic pain in prisoners of war by use of injections of liver extract, which was the only drug available. I have since had the opportunity of observing the effect of liver extract administered empirically to 20 patients with herpes zoster. In all cases the preparation used was "neo-hepatex," administered intramuscularly.

Case Histories

Case 1.—June 19, 1946. Male aged 76. Herpes of left forehead, with severe pain. Dosage: 4 ml. The following day there was no pain and the lesion had not extended. A further 2 ml. was given the next day. There was no post-herpetic pain or recurrence.

Case 2.—July 20, 1946. Male aged 47. Herpes of forehead. Dosage: 4 ml. first day, followed by 2 ml. on the two ensuing days. Pain ceased after the first injection.

Case 3.—Oct. 2, 1946. Female aged 71. Herpes involving the twelfth thoracic segment on the left side, with severe pain. Dosage: Two injections of 4 ml., with three days' interval. Pain completely relieved by Oct. 7.

Case 4.—Oct. 3, 1946. Female aged 63. Herpes of left side of head and neck, with severe pain. Dosage: 4 ml. on Oct. 3 and Oct. 5. Completely free from pain after Oct. 5.

Case 5.—Oct. 4, 1946. Male aged 16. Herpes of right buttock and thigh, with moderate pain. Dosage: 4 ml. Pain and vesicles disappeared in 24 hours.

Case 6.—Oct. 14, 1946. Male aged 77. Complained of post-herpetic neuralgia for 10 months. Dosage: 4 ml., with relief of pain. A further 4 ml. was injected on Oct. 16.

Case 7.—Oct. 28, 1946. Male aged 68. Post-herpetic neuralgia for 15 months. Three injections of 4 ml. produced no diminution of pain.

Case 8.—Nov. 28, 1946. Male aged 38. Herpes genitalis for 6 weeks. Dosage: 4 ml. on two successive days. By Dec. 3 the herpes had disappeared.

Case 9.—Jan. 13, 1947. Male aged 23. Herpes of left chest, with moderate pain. Dosage: 4 ml. on three successive days. Pain-free on Jan. 16.

Case 10.—Jan. 14, 1947. Female aged 75. Three days' history of herpes of right thigh, groin, and lower abdomen, with severe pain. Dosage: 4 ml. on two successive days. Complete relief of pain.

Case 11.—May 5, 1947. Female aged 56. Herpes of right upper thorax, right shoulder, and neck, associated with severe pain. Dosage: 4 ml. on May 5 and May 6; 2 ml. on May 10. The pain became considerably less by May 8, and the patient was pain-free on May 12.

Case 12.—July 1, 1947. Female aged 59. Two weeks' history of herpes of forehead, with moderate pain. Dosage: 4 ml. on July 1 and July 2, with diminution of pain.

Case 13.—July 14, 1947. Male aged 66. Herpes of left face for a week. Dosage: 4 ml. on July 15, 17, and 19. Pain relieved after first injection. Pain-free by July 26.

Case 14.—Sept. 8, 1947. Male aged 34. Two days' history of herpes of left groin. Dosage: 4 ml. on Sept. 8, 9, 12, and 15. By Sept. 15 he was pain-free and the rash had faded.

Case 15.—Sept. 18, 1947. Female aged 26. Herpes of left face, with considerable pain and constitutional disturbance. Dosage: 4 ml. on Sept. 20. This had no effect on the condition, which cleared, however, by Oct. 9.

Case 16.—Sept. 24, 1947. Male aged 22. Herpes of left chest. Dosage: 4 ml. on Sept. 24 and 25, with relief of pain.

Case 17.—Dec. 1, 1947. Female aged 67. One week's history of herpes of upper right chest. Two days previously the rash had spread to the right side of the neck and face, and there was considerable pain and malaise. Dosage: 4 ml. on Dec. 1, 2, and 8. Pain lessened after the first dose and completely disappeared by Dec. 12.

Case 18.—Jan. 21, 1948. Female aged 31. Two days' history of herpes of the left chest, with pain. Dosage: 4 ml. on Jan. 21. Pain-free, with no further extension of the rash by Jan. 24.

Case 19.—July 10, 1948. Female aged 58. One week's history of herpes of the left side of the neck. Dosage: 4 ml. on the succeeding two days. Pain was relieved by July 12, and had completely disappeared by July 19.

Case 20.—Aug. 19, 1948. Male aged 73. One day's history of herpes of right hip and abdomen, with severe pain and malaise. Dosage: 4 ml. on Aug. 19 and 21, with relief of pain.

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Medical Memoranda

A Case of Abortus Infection treated with "Aureomycin"

Spink *et al.* (1948) reported a series of 24 cases of human brucellosis due to *Br. melitensis* treated in Mexico with "aureomycin" (Lederle Laboratories). They say: "In such a disease a long follow-up study will be necessary to evaluate the drug completely. . . . But the immediate results of treatment have been so encouraging and so unexpected that this report is being made." The following is an account of a case of *Br. abortus* infection in which the immediate results were striking also.

CASE REPORT

The patient, a man aged 58, became ill fairly abruptly in the middle of February, 1949, at a time of influenza prevalence. The persistence of the illness led to its differentiation from influenza, and a blood agglutination reaction on March 16 gave a titre to *Br. abortus* of 1:500, less decisively 1:1,000. At this time the pyrexia was mainly at night, and often there was a night sweat. He was given 36 g. of sulphamezathine over six days without effect. The pyrexia next became diurnal also and the number of sweats increased to several in a 24-hour period. At this stage he was admitted to hospital on March 28, about six weeks from the onset.

His general condition was comparatively good, but he was anxious about his apparently interminable, uncomfortable, and incapacitating illness. Clinical examination did not reveal anything inconsistent with brucellosis; no enlargement of the spleen was detected. Agglutination reactions again gave 1:500 to *Br. abortus*, and blood culture was negative. An issue of streptomycin was obtained, but no apparent effect from the drug was noted with a dosage of ½ g. intramuscularly every six hours, and after five days the drug was stopped. Two days later aureomycin was started by mouth and given as follows: one capsule (250 mg.) every twelve hours for two days and two capsules (500 mg.) every six hours for 7½ days (a total of 16 g.

of drug). The initial smaller dose was to minimize any tendency there might be to a sharp reactive rise of temperature on beginning treatment—a tendency reported in the series of Spink *et al.*

After starting the drug the pyrexia, which had been broadly of an intermittent pattern swinging between limits of 97 and 102° F. (36.1 and 38.9° C.), became in about 24 hours more continuous and reached over 103° F. (39.4° C.); in a further 36 hours it began to fall rapidly and reached normal in about another 24 hours, where it remained. It was still steadily normal 10 days later, when the patient's wish to return home was acceded to (April 22), and on interviewing him on May 12 he reported continued freedom from his former febrile sensations, and a single check on his temperature gave a normal level.

The drug was easily administered and caused no apparent toxic reactions.

I am indebted to Dr. R. E. Jones, of the Public Health Laboratory, Coventry, for serological data and other assistance, and to Dr. T. H. W. Ritchie, of Bedworth, Warwickshire, for clinical information.

J. F. GALPINE, M.D., M.R.C.P.Ed., D.P.H., D.C.H.
Medical Superintendent, Isolation Hospital, Coventry.

REFERENCE

Spink, W. W., Braude, A. I., Castaneda, M. R., and Goytia, R. S. (1948). *J. Amer. med. Ass.*, **138**, 1145.

Arteriovenous Fistula of the Lung

[WITH PHOTOGRAVURE PLATE]

Until recently arteriovenous fistula of the lung has only rarely been reported. It was thought worth while, therefore, to record the following case, with details of the investigations made to establish the diagnosis. The question of the advisability of surgical treatment in this case is discussed.

CASE REPORT

The patient, a man aged 36, first came under medical care in August, 1947, complaining of a dull ache in the right upper chest which he attributed to strenuous and unaccustomed exercise taken some two weeks before. There was a history of slight morning cough for some years, with an occasional trace of mucoid sputum, in which he had noted streaks of blood once only, on the day before he was first seen. This streaking has since been observed on another occasion. No dyspnoea or other symptoms have been present. His previous history was not relevant, and on close questioning epistaxis or other evidence of a bleeding diathesis was not admitted. Goldman (1948), in a review of the literature, has stressed the hereditary factors in the aetiology of the condition, but in this case the family history, so far as it could be obtained, was also negative.

Physical examination did not reveal any cyanosis or finger-clubbing, and no abnormal physical signs were found in the respiratory system. The pulse was regular at 80 per minute and was not collapsing in character. There was no evidence of enlargement of the heart or of cardiac murmurs. The blood pressure was 135/75 mm. Hg in both arms. A soft murmur, heard only in systole, was present over a roughly circular area about 6 in. (15 cm.) in diameter in the lower part of the right axilla. The murmur was faint but could be well heard with the patient lying on his left side and extended over a pillow. It was not appreciably affected by respiration. Careful examination of the skin and mucous membranes revealed no evidence of other haemangiomata or telangiectases. Other systems were normal.

The diagnosis was chiefly established by radiography. The postero-anterior film (Plate, Fig. 1) showed a mottled opacity in the lower zone of the right lung which on the lateral film overlay the lower part of the heart shadow. Between the opacity and the vascular markings of the right hilum was a longitudinal shadow which on tomography (Fig. 2) could be clearly identified as consisting of two main parts representing branches of the pulmonary artery and vein. On screening opinion was divided on whether the shadow pulsated, but it was noted in a bronchogram (Fig. 3) that, whereas nearly all the bronchial shadows, including those in juxtaposition to the heart, were present and clearly defined, those close to the main opacity were blurred.

Mr. R. C. Brock kindly arranged for angiography at Guy's Hospital, and the resulting radiograph (Fig. 4) leaves no doubt regarding the vascular nature of the lesion. Mr. Brock also reported a normal bronchial tree on bronchoscopy.

Blood examination revealed: red cells, 6,100,000 per c.mm.; haemoglobin (Haldane), 110%; white cells, 6,000 per c.mm. with a normal differential count. Oxygen saturation was found to be 89% in a specimen of arterial blood. The sedimentation rate was 2 mm. in one hour (Westergren). Culture of sputum revealed a mixed growth of normal pulmonary flora. The vital capacity was 4,500 c.cm. The electrocardiogram (three standard leads) was normal in all respects.

The case has now been observed over a period of seven months without any change in the clinical or radiological picture.

DISCUSSION

On the data available the lesion must be regarded as a vascular abnormality or tumour in the substance of the lung, with a minimal pulmonary arteriovenous shunt but no evidence of similar lesions or telangiectasia elsewhere, though the presence of such lesions cannot be excluded *ante mortem*. In view of the minimal shunt in this case the possibility of the systemic (bronchial) circulation being implicated, as suggested by Maier *et al.* (1948), must be considered. The main practical problem is whether surgical removal should be advised. On the one hand we are dealing with a virtually symptomless lesion with very little disturbance of the normal physiology. On the other there is the danger of haemorrhage and the possible extension of the lesion with an increase in the shunt or even malignant change. At the moment there would appear to be no general contraindications to surgery, but from the few reported cases it would seem that operative removal is not without risk, particularly where there is a large pulmonary arteriovenous shunt. There is also no certainty that other lesions are not present.

Surgical removal has been advised but so far refused, so that pathological data on the nature of the lesion are not available.

I would like to thank Dr. F. H. Young, physician to the Brompton Hospital, for permission to publish this case and for his helpful criticism; Dr. F. Prime for performing the oxygen saturation test; and Dr. L. G. Blair for the skiagrams.

F. D. BEDDARD, M.B., B.S.,
late A.R.M.O., Brompton Hospital.

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Maier, H. C., *et al.* (1948). *J. thorac. Surg.*, **17**, 13.

At a meeting of the Professional and Technical Council B of the Whitley Councils for the Health Services on April 20 the following agreement was reached on the salaries of medical laboratory technicians employed in the National Health Service in England, Wales and Scotland. *Student and Junior Technician:* Aged 16, £110 per annum; 17, £125; 18, £145; 19, £165; 20, £195; 21, £225; 22, £240 10s.; 23, £260; 24, £279 10s.; 25 and over, £299. On passing the Intermediate Examination of the Institute of Medical Laboratory Technology (or equivalent qualification), or the Inter. B.Sc., the salary is increased by £13 per annum at any point on the scale. If no examinations are passed, the salary is increased to £312 per annum at age 30. *Technician:* £370×£15–£435. On gaining the Fellowship of the Institute of Medical Laboratory Technology (or equivalent qualification) the salary is increased by £15 at any point on the scale. *Senior Technician:* £450×£20–£530. *Chief Technician:* £530×£20–£650. London weighting: In the Metropolitan Police Area all scales are subject to London weighting on the following basis: Age 16–20, £10; 21–25, £20; 26 and over, £30. The new scales operate from April 1, 1949.

Reviews

INFECTIOUS DISEASES

Traité de Médecine. Vol. 1. Maladies Infectieuses. By A. Lemierre, Ch. Lenormant, P. Pagniez, P. Savy, N. Fiessinger, L. de Gennes, A. Ravina. (Pp. 1,096. 2,200 francs.) Paris: Masson et Cie. 1948.

The Acute Bacterial Diseases. By H. F. Dowling, M.D., F.A.C.P. (Pp. 465; illustrated. 32s. 6d.) London and Philadelphia: W. B. Saunders. 1948.

These two books cause one to reflect on the needs of the reader of the textbook on infectious diseases. Some will want a work which devotes special care to the description of all aspects of the infections, a book to which reference can be made when the unusual is encountered and which will reflect the breadth of the writer's experience. Such is the clinician's book, and after the detail of the clinical description the reader is satisfied with less in the way of bacteriology, pathology, epidemiology, or even specific therapy. This is the classical approach, and the original texts of books like Ker's *Infectious Diseases* and Ricketts's monograph on smallpox still remain as up to date as when they were written because of the mastery they display in their clinical observation. Others, however, will be content if the clinical descriptions are less detailed, provided there is adequate discussion of the most recent knowledge of, for example, bacteriology or therapy. Naturally, this type of book tends to "date" more quickly, especially in these days, when treatment may change so rapidly.

Either of the present books may be recommended to both groups of readers, though each has its emphasis towards one or other aspect of its subject. The French work tends towards the classical form. The present volume is the first of a series of seventeen which will clearly supply a comprehensive review of modern French medicine. The infectious diseases described comprise most of the notifiable diseases common to this country. A detailed clinical description is supplied; and, as one would expect in a Continental textbook, each disease is carefully subdivided into every possible clinical type. There is no doubt that the book excels in painting the clinical picture, and though the British reader will not agree with all the interpretations he will enjoy the reading.

The section on typhoid fever (which occupies 164 pages) may be used to exemplify the style. The bacteriological description is impoverished by an absence of reference to recent advances, and the importance of phage typing is not mentioned. This naturally weakens the section on epidemiology. The discussion of pathogenesis is excellent; so is the detailed description of the clinical course of the disease and its treatment. Here, as elsewhere, the fine subdivision into different clinical types rather engenders the view that "the disease is everything." One would welcome an extended discussion on the host-parasite relationship and a more obvious appreciation that the form of the infection is not merely a question of the causative organism.

Scarlet fever is excluded from the section on streptococcal diseases and is described as a specific malady, the writer agreeing with the Dicks on the specificity of the scarlet fever streptococcus. There is thus no concept of scarlet fever as but part of the whole range of streptococcal disease. The role of reinfection as a causative factor in many of the complications is not stressed, and the possible connexion between scarlet fever and rheumatic fever is overlooked. Finally, one notes that the use of laboratory methods in the diagnosis of smallpox is not well discussed and the place of egg-culture not mentioned. But these deficiencies, viewed from the classic approach, are secondary to the excellence displayed in the description of the disease.

Dowling's book, as one would expect, is a praiseworthy survey of the "new look" in fevers. Here the author turns away from the strictly clinical or pathological approach, and, because of the importance of the aetiological agent in dictating treatment, groups the diseases on a bacteriological basis. There is thus particular emphasis on the place of laboratory aids in obtaining a precise diagnosis. Having decided on the most rapid and certain methods to be used, the author discusses specific therapy and the effects which may be expected from its correct application. In the first part of the book are four chapters dealing with serum therapy, sulphonamides, penicillin, and streptomycin. These present a clear review of the subjects and should be particularly valuable to the person who is not dealing with these substances daily in infectious diseases, for they are essentially practical. Throughout the book there is a profusion of practical diagrams and individual case records, permitting the reader to see how his case ought to respond to the treatment advised. Though it is somewhat expensive for the student, there can be no doubt that the practical tone of the book and its ready appeal to the visual memory make it a useful volume for the undergraduate. The graduate can be assured of finding in it a fund of ripe experience.

T. ANDERSON.

STUDIES IN NEUROLOGY

Critical Studies in Neurology. By F. M. R. Walshe, M.D., F.R.S. (Pp. 256. 15s.) Edinburgh: E. and S. Livingstone. 1948.

In this convenient little volume Dr. Walshe reprints some of his well-known contributions to neurological literature. He excels at writing a critical review, and the reader cannot fail to admire his remarkable clarity of thought, choice of words, and vigour of expression. Six of his studies are reprinted, including those on cutaneous sensibility, the motor cortex, and the pyramidal system, as well as his address on the integration of medicine.

A prime purpose of this reprint is "to stimulate critical thinking amongst postgraduate students." While some knowledge of recent neurophysiological and anatomical work is desirable for the full appreciation of Dr. Walshe's reviews, students in many branches of medicine will welcome this collection of his stimulating studies.

W. RITCHIE RUSSELL.

AGONAL ACIDOSIS

Investigations on Agonal Acidosis. By I. B. Fabricius Hansen. (Pp. 134. No price.) Copenhagen: P. Branner, 29, St. Kongensgade. 1948.

This monograph is the result of an elaborate study of blood chemistry in 38 cases of impending death. Particular attention was paid to changes in acid-base balance, and known causes of acidosis, such as diabetes and nephritis, were excluded from the series. The author concludes that a profound acidemia is a frequent finding in the agonal state, the value of the blood *p*H falling to 7.0 or lower. This acidosis is partly due to organic and inorganic acids—lactic, pyruvic, phosphoric and sulphuric—but decreased pulmonary ventilation is a contributory factor, causing a rise in the CO_2 tension of the blood. Azotemia is also usually present, but is not directly correlated with the acidosis.

A possible criticism of the results lies in the method of blood sampling, which was by venesection or by cardiac puncture after death. Arterial blood would have been more appropriate for these studies. This difference would, however, probably not invalidate the general nature of the results. The relation of the findings to therapy is discussed, and a case is recorded in which an apparently moribund patient was revived by treatment with nikethamide and ephedrine. On the whole the results recorded are those which might have been expected from previous work, but this well-documented account forms a valuable record of the nature of pre-mortal changes in blood chemistry.

N. F. MACLAGAN.

GROUP THERAPY

Introduction to Group-Analytic Psychotherapy. Studies in the Social Integration of Individuals and Groups. By S. H. Foulkes, M.D. (Pp. 181. 21s.) London: William Heinemann Medical Books. 1948.

The author describes methods developed by him to deal with civilian out-patients when wartime demands, which could not be met by individual psychotherapy, forced psychiatrists to experiment with group techniques. These methods were later applied to military patients at Northfield Military Psychiatric Hospital, and after the war to patients at Bart's. What was originally expedient to meet a particular situation became, in

the author's view, not only a technique possessing great practical advantages but "by far the most potent and decisive instrument for the application of psycho-analytic experience on a broader scale." Now the increasing demands of the National Health Service force all who are engaged in out-patient psychotherapy to consider whether they should begin to use time-saving group methods.

The techniques described in this book apply psycho-analytic theory to group situations. The conductor of the group corresponds to the analyst, and the analysis of relations within the group is akin to the analysis of the transference in the psycho-analytic situation. It is not necessary, however, to be a psycho-analyst to apply the method; indeed, it may be a disadvantage, because Dr. Foulkes is of the opinion that a good analyst does not always make a good group therapist. With the help of this book anyone with moderate experience of individual therapy can make a start, and since the responsibility is carried by the group as a whole an inexperienced therapist is likely to do less damage than in attempting therapy with individuals. Training of group leaders is also easy, since they can be incorporated as members of the group and receive practical instruction without the necessity of prolonged personal analysis.

Other books have described didactic and directive methods of treatment, more in the nature of mass than group therapy. Dr. Foulkes's approach will be of greater interest to those with experience of psycho-dynamics and a knowledge of psycho-pathology. The writing is at times diffuse and the argument difficult to follow, disadvantages which are inevitable in a work which breaks new ground and in which the formulations are bound to be tentative rather than definitive.

T. FERGUSON RODGER.

ADVANCES IN BIOCHEMISTRY

Fortschritte der Biochemie 1938–1947. By F. Haurowitz. (Pp. 364. 40 Swiss francs.) Basle: S. Karger. 1948.

Professor Haurowitz, who occupied the chair of physiological chemistry at the University of Istamboul, was in a unique position during the recent war to follow new developments in biochemistry. His observations are summarized in this well-balanced review for German-speaking medical men, chemists, and biologists (*Advances in Biochemistry, 1938–47*), which contains over 2,200 selected references to original literature.

Progress in biochemistry during the last ten years has been characterized by the greater use of physico-chemical techniques. This development has been fully appreciated by Professor Haurowitz, who has devoted his opening chapter to an account of stable and radioactive isotopes; in later chapters he refers repeatedly to their uses. Other physico-chemical techniques, such as the ultracentrifuge, electrophoresis, and chromatography, are adequately described. A chapter on thermodynamics and kinetics introduces a feature that is new to books on biochemistry, but it is suggestive of the way in which the subject is likely to develop during the next few years. Professor Haurowitz's book covers the whole field of classical biochemistry but is hardly likely to appeal to English-speaking medical men who have access to publications such as *Annual Reviews of Biochemistry*. The high quality of the printing and binding is a credit to the Swiss publishers.

J. E. PAGE.

Skull, Sinuses, and Mastoids. A Handbook of Roentgen Diagnosis, by Barton R. Young, M.D. (pp. 328; illustrated. £1 16s. Chicago: Year Book Publishers Inc. London: H. K. Lewis and Co.), is the latest addition to the "Handbook" series. From the radiologist's point of view it is well worth the dollars we spend on it. The book is divided into three parts—on the skull, the sinuses, and the mastoids. In the skull section, ventriculography and encephalography are deliberately omitted, but every abnormality, common or rare, which can be detected by routine radiography is succinctly described and beautifully illustrated. The section on the sinuses and mastoids is still better. Too few radiologists have an opportunity for specialized study of these regions, and too many of our reports are vague references to thickened lining membrane and loss of translucency. Dr. Young not only shows what contribution the radiologist can make to the diagnosis of sinusitis and mastoiditis, but describes and illustrates it excellently. This is a most useful little book, and Parts II and III should be compulsory reading for all radiologists.

BOOKS RECEIVED

[*Review is not precluded by notice here of books recently received*

Lawson Tait. By I. Harvey Flack, M.D. (Pp. 148. 17s. 6d.) London: William Heinemann. 1949.

A Survey of the British Pharmacopoeia, 1948. (Pp. 7[illegible] 5s. 6d.) London: The Pharmaceutical Press. 1949.

A History of Oto-Laryngology. By R. Scott Stevenson, M.D., F.R.C.S.Ed., and D. Guthrie, M.D., F.R.C.S.Ed. (Pp. 155. 17s. 6d.) Edinburgh: E. and S. Livingstone. 1949.

Proceedings of the National Conference of Social Work, 194[illegible] (Pp. 498. 32s. 6d.) London: Geoffrey Cumberlege. 1949.

Clinical Methods. By Sir R. Hutchison, Bart., M.D., LL.D., F.R.C.P., Donald Hunter, M.D., F.R.C.P., and R. R. Bomford, D.M., F.R.C.P. 12th ed. (Pp. 484. 17s. 6d.) London: Cassell. 1949.

Traité des Fractures des Membres. By H. Judet, J. Judet, and R. Judet. 3rd ed. (Pp. 405. 2,900 francs.) Paris: Librairie Maloine. 1948.

Les Dyskinésies Biliaires. By J. Caroli and M Mercadier. (Pp. 78. No price.) Paris: Vigot. 1949.

Krämpfe im Kindesalter. By H. Zellweger. (Pp. 195. 18 Swiss francs.) Basle: Benno Schwabe. 1948.

Greek Science: Theophrastus to Galen. By B. Farrington. (Pp. 181. 1s. 6d.) Harmondsworth: Penguin Books. 1949.

The Psychology of Sex. By O. Schwarz. (Pp. 296. 1s. 6d.) Harmondsworth: Penguin Books. 1949.

Medical Manual. By W. R. Feasby, B.A., M.D. (Pp. 16[illegible] 12s. 6d.) London: Geoffrey Cumberlege. 1948.

The Shadow on the Path. By G. Bankoff, M.D., F.R.C.S. (Pp. 207. 12s. 6d.) London: Peter Garnett. 1949.

Pathology of the Nervous System. By J. H. Biggart, C.B.E., M.D., D.Sc. 2nd ed. (Pp. 352. 21s.) Edinburgh: E. and S. Livingstone 1949.

Pathologie des Kohlehydratstoffwechsels. By E. Frank. (Pp. 342. 24 Swiss francs.) Basle: Benno Schwabe. 1949.

Materia Medica. By W. Hale-White, K.B.E., M.D., LL.D. 28th ed. (Pp. 532. 16s.) London: J. and A. Churchill. 1949.

Studies in Reading. Issued by the Scottish Council for Research in Education. Vol. 1. (Pp. 212. 5s.) London: University of London Press. 1948.

An Evaluation of Selected Schools of Nursing. By H. Nahm. (Pp. 97. 11s. 6d.) London: Geoffrey Cumberlege. 1948.

Elementary Anatomy and Physiology. By J. Whillis, M.D., M.S., F.R.C.S. 3rd ed. (Pp. 296. 16s.) London: J. and A. Churchill. 1949.

Practical Obstetrics. By B. T. Mayes, M.B., B.S., F.R.C.S.Ed., F.R.A.C.S., F.R.C.O.G. (Pp. 306. 45s.) London: George Harrap. 1948.

A Proposito del "Cuore di Guerra." By G. Donati. (Pp. 143. No price.) Rome: Tipografia Regionale. 1946.

Personality Projection in the Drawing of the Human Figure. By K. Machover, Ph.D. (Pp. 181. 17s. 6d.) Oxford: Blackwell Scientific Publications. 1949.

Malignant Disease and its Treatment by Radium. By Sir S. Cade, K.B.E., C.B., F.R.C.S., M.R.C.P. Vol. 2. 2nd ed. (Pp. 4[illegible] 52s. 6d.) London: Simpkin Marshall. 1949.

A Method of Anatomy. By J. C. Boileau Grant, *M.C.*, M.B., Ch.B., F.R.C.S. 4th ed. (Pp. 852. 38s. 6d.) London: Bailliere, Tindall and Cox. 1948.

Congenital Malformations of the Heart. By H. B. Taussig, M.D. (Pp. 618. 55s.) London: Geoffrey Cumberlege. 1947.

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NON-SPECIFIC RESISTANCE TO VIRUS INFECTIONS

It has long been recognized that some animal species have an inherent complete resistance to infection with certain viruses, and also that some individuals within a susceptible species appear to have a natural resistance to a particular infection. Thus most strains of human poliomyelitis virus are infective only for primates and man, though four strains have been found which are also infective for mice and cotton-rats. Investigations in regions where yellow fever is endemic have revealed that widespread infection may occur without any sign of clinical disease; then some unknown factor unrelated to the virus alters this resistance of the human population, and suddenly infection results in severe disease with a high mortality, as occurred in the Sudan in 1940. In a recent review of the subject Findlay[1] suggests that the non-specific factors which may play a part in natural resistance are genetic constitution, age, nutrition, hormone production, body temperature, interference by other viruses, specific cell receptors, and the presence of pseudo-viricidal bodies in the serum.

Evidence of the influence of these various factors is obtained by observation of the natural or experimental disease in man or animals. It is difficult to obtain satisfactory controls for comparison in natural conditions, and in experimental work the use of some species other than the natural host may lead to an erroneous conclusion about the part these factors may play in the natural disease. Thus in discussions on the effect of nutrition on virus infections much has been heard of the lowered susceptibility to Lansing poliomyelitis virus of mice fed on a thiamine-deficient diet, but little emphasis has been given to the fact that infection with this virus in the cotton-rat and rhesus monkey is not affected by a thiamine deficiency in their diet.

Viruses are essentially intracellular organisms, and most of the factors referred to by Findlay probably play their part only in so far as they affect the surface structure or metabolism of the cells into which the virus must penetrate in order to multiply. The results of experiments in recent years indicate that the conditions essential for growth are much more rigorous for some viruses than for others. The exact metabolic requirements of each virus will probably be found to differ in some particular. The slight differences between the ages of maximum incidence of some of the infectious diseases caused by viruses are presumably due to the mode of spread rather than to an effect of age upon the susceptibility of the tissues to a particular virus. However, in the influenza epidemic of 1918 the virus appeared to be most virulent for healthy young adults, and a peculiar example of the effect of age is the malformations in the foetus produced by the virus of rubella, which is comparatively innocuous in infants, children, and adolescents. Certainly a number of animal viruses have been more infective for the young than the adult when inoculated by routes other than intracerebral in chick embryos, mice, and guinea-pigs.

The body temperature in man is normally maintained at a fairly constant level, but in certain conditions, such as fevers due to non-viral infection or artificially produced as a therapeutic measure, latent infections with the herpes simplex virus may become clinically manifest. Research workers have known for some years that there are optimal temperatures for the development of certain viruses in chick embryos. Whether temperature changes exert their effect through alteration of the blood supply or rate of metabolism, or through other mechanisms, is not known.

One of the most interesting phenomena which have come to light recently in the study of virus diseases is the ability of certain viruses to interfere with the multiplication of other immunologically unrelated viruses in the same susceptible host. This has been found to occur among the animal, plant, and bacterial viruses, and it appears to be due to competition for some common factor on the cell surface or essential metabolite within the cell. In some instances avirulent strains may affect the action of virulent strains, and even dead virus may affect the same virus in active form. Antibody can play no part in such a reaction, because the interval between the two inoculations is too short. The possibility of making use of this phenomenon for protection during epidemics of certain virus diseases has received attention recently.

So-called tissue selectivity or affinity of certain viruses is probably dependent upon the presence of receptor groups to which the virus can attach itself preparatory to invading a susceptible cell. In some cases—e.g., influenza—it has been found that these cell receptors can be destroyed by the action of certain enzymes, such as that produced by *Vibrio cholerae* and *Clostridium welchii*. Unfortunately the activity of these enzymes cannot be controlled with any certainty, so their use in therapeutics is unlikely. It has also been found that sera from certain animal species have the power of neutralizing or inactivating some viruses though the animals themselves probably have never been exposed to infection with the particular virus. This action is not understood at the present time, but may be related to the recent observation of Casals and Olitsky[2] that serum and brain lipids are able to inactivate certain encephalitis viruses *in vitro*. Obviously the subject of non-specific immunity to virus infections offers inviting prospects for research.

[1] *J.R. micr. Soc.*, 1948, **58**, 20.
[2] *Science*, 1948, **108**, 690.

TREATMENT OF HEPATIC CIRRHOSIS

Cirrhosis of the liver is not a condition which physicians expect to cure. In fact, in a paper appearing elsewhere in this issue Damodaran states that once cirrhosis is established there is nothing at our disposal to prevent its progress. But the discovery of the importance of malnutrition in the pathogenesis of the condition has led to improvements in treatment. Since Patek[1] introduced the high-protein, high-vitamin regime in 1937 many reports have appeared on cases of hepatic cirrhosis treated on similar lines. With very few exceptions these confirm Patek's favourable results. In the majority of the cases the effect of treatment was assessed only on clinical grounds, but liver-function tests were occasionally employed. The objective evidence of improvement recently obtained by Beams and Endicott[2] is therefore welcome. They studied a group of fourteen patients on high-protein, low-fat diets, nine of whom received a daily supplement of 4.5 to 5 g. of methionine. In all the patients receiving the supplement the histological changes indicated a favourable response, while in only one of the other patients were significant histological changes noted after treatment. This paper is illustrated by excellent photomicrographs which clearly show the improvements described.

Two other methods of treating hepatic cirrhosis have recently been reported; these are directed more towards improving the symptoms than towards reversing the changes in the liver. Schemm and Layne,[3] following the former's success in the treatment of the ascites of congestive cardiac failure by a high fluid intake and diet low in sodium and high in acid ash, have used similar methods in the treatment of cirrhosis. The result in nineteen of the twenty cases treated was complete clearance of the ascitic fluid. Even when the serum protein was low and the albumin-globulin ratio reversed, large amounts of fluid were successfully eliminated, and the authors conclude with justification that too much emphasis has been placed on the increased venous pressure in the portal circulation and on the "critical level" of the plasma albumin as causes of ascites. This conclusion, at least as regards the effects of serum albumin, is confirmed by the report[4] that in three cases intravenous injection of albumin was without effect upon either the ascites or the urinary output. It therefore seems that the liver plays an important part in water metabolism apart from its effects upon the serum proteins and the portal circulation. The observation[5] that parenchymal hepatitis is associated with a fall in the antidiuretic agent normally present in the urine indicates a possible mechanism by which the metabolism of water is disturbed in hepatic disease. Adequate excretion of this antidiuretic factor, probably of pituitary origin, may depend upon the integrity of the liver, and impairment of liver function might therefore lead to excessive water retention.

The second method of treatment is directed towards the correction of the endocrine disturbance frequently associated with hepatic disease. The commonest manifestation of such disturbance is a tendency to feminization in the male, as shown by gynaecomastia and testicular atrophy. These symptoms, together with alopecia pectoralis, spider naevi, and palmar erythema, are probably the result of impairment of the normal hepatic mechanism for the inactivation of steroids.[6] Since the B vitamins appear to be necessary for the inactivation of oestrogens but not of androgens,[7] the latter will be more completely inactivated than the former in patients with the malnutrition that frequently accompanies chronic hepatitis. Rosenak, Moser, and Kilgore[8] have therefore studied the effect of testosterone propionate on twelve cases of alcoholic cirrhosis. They gave 25 to 100 mg. three times weekly after the progress on routine therapy had been assessed. All of the twelve patients treated felt better, and in eleven of them improvement was also noted in some of the following features: body weight, loss of ascites, spider naevi, and palmar erythema. This treatment, however, did not affect the growth of body hair or testicular atrophy, though sexual vigour was improved. Some improvement in the results of liver-function tests was also observed. The authors, while admitting the possibility that the observed benefits may have resulted from an improvement in general health, considered that testosterone was a valuable addition to the routine treatment of these cases. Since an increase of the basophil granules of the liver cells has been observed both after high-protein feeding and after androgen administration[9] there may be reasons other than those mentioned by the authors for adopting this method of treatment.

1 *Proc. Soc. exp. Biol., N.Y.*, 1937, **37**, 329.
2 *Gastroenterology*, 1947, **9**, 718.
3 Ibid, 1947, **9**, 705.
4 Patek, A. J., Mankin, H., Colcher, H., Lowell, A., and Earle, D. P., *J. clin. Invest.*, 1948, **27**, 135.
5 Ralli, E. P., Robson, J. S., Clarke, D., and Hoagland, C. L., *J. clin. Invest.*, 1945, **24**, 316.
6 Selye, H., *J. Pharmacol.*, 1941, **71**, 236.
7 Biskind, M. S., and Biskind, G. R., *Endocrinology*, 1943, **32**, 97.
8 *Gastroenterology*, 1947, **9**, 695.
9 Hall, K., and Korenchevsky, V., *British Medical Journal*, 1938, **1**, 438.

CONSULTANTS' TERMS

The Ministry of Health has now announced the terms and conditions of service for consultants and specialists in the Health Service, and the statement appears in the *Supplement* this week. These are the final terms formulated after discussions held during the last few months with the profession. Consultants and specialists will have an opportunity of considering the terms before July 5, when the Central Consultants and Specialists Committee and the Joint Committee successively meet to consider the views of their constituents. No one should sign a contract until the Joint Committee has expressed its opinion on the Ministry's statement.

The financial terms offered are substantially the same as those in the original proposals.[1] It will be noted that consultants appointed at the age of 31 or earlier are still penalized for their youth. It is questionable whether these terms adequately translate the Spens recommendations into present-day values, since the increase varies between about 13% and 10%. If allowance is made for the Government superannuation contribution of 8% the betterment factor is between 22% and 19%. The remuneration offered medical superintendents is unsatisfactory in that the proportion of their time devoted to administration is to be

1 *British Medical Journal Supplement*, March 19, p. 149.

paid for at the rate appropriate to lay administrative staff (unless they devote only a small proportion of their time to it); yet a medical man brings qualifications to the task that the layman does not, and he should be remunerated accordingly. The Ministry's document states that boards should try to reduce to a minimum the time given by medical staff to administrative duties, but if it is the Minister's intention to eliminate medical superintendents from the Service he should say so directly instead of putting forward terms which may indirectly have that effect.

It is doubtful whether the security of tenure of posts offered consultants is adequate. The document states that no period of tenure or of notice should be specified in the contracts, and consultants may consider the safeguards offered to be too slight. If he thinks that the hospital board is unfairly terminating his appointment, the consultant can send a statement of the facts to the Minister, who will obtain the views of the board and put the case before a professional committee. The committee may interview both parties. In the light of the committee's findings the Minister may confirm termination, or direct reinstatement, or arrange a third solution agreeable to the parties concerned. It would be preferable if the case were put before the professional committee before the board considered the matter, and undoubtedly the consultant ought to have the right to appear before this committee if he wishes to. The Minister has included a paragraph pointing out that the board has a moral obligation to assist the consultant to obtain comparable work elsewhere if reorganization threatens his displacement or the serious disturbance of his services. Less reassuring is the absence of any provision preventing boards from whittling down the number of sessions done by a part-time consultant.

Consultants will be unlikely to find these terms so unreasonable that they wish to reject them outright. If this is the case, then the committees representing consultants and specialists may advise general acceptance of the terms and conditions offered, leaving open the question of modifying this and that detail in the light of experience.

STREPTOMYCIN AND THE LABYRINTH

It has been known from an early stage in the trials of streptomycin that damage to the labyrinth is not infrequent after large doses of the drug. A recent study by Barr, Floberg, Hamberger, and Koch[1] has shown that a daily dose of less than 1 g. and a total dose of less than 60 g. carry a relatively small risk of vestibular damage provided there is no impairment of renal function. Where, however, the kidneys are damaged or, in cases with normal renal function, if the dose of streptomycin exceeds the above limits, the amount of the drug in the blood may rise to a concentration sufficient to damage the vestibular system. Thus these authors observed evidence of vestibular disturbances in 16 out of 26 cases receiving more than 60 g. The evidence that streptomycin may affect the hearing is less conclusive. In the majority of the cases where deafness occurred the disease for which the drug was given may equally well have caused damage to the eighth nerve. Nevertheless, streptomycin may occasionally damage the hearing. The site of damage to the vestibular system is still in dispute. Glorig and Fowler[2] considered their clinical studies showed that streptomycin injures the vestibular nerve peripherally. Floberg, Hamberger, and Hyden,[3] using cytochemical methods, demonstrated on experimental animals that the localization of such injuries is both peripheral and central; they found definite changes both in the vestibular ganglion and in Deiter's nucleus.

It is not often that an undesirable side-effect of a drug can be turned to good account, but Fowler[4] has used streptomycin as a specific neurotoxin to damage the vestibular organ in cases of vertigo unsuitable for other forms of treatment. In a preliminary trial, four patients suffering from severe attacks of vertigo due to Ménière's disease and not relieved by medical treatment were given 0.5 g. of streptomycin every three hours (4 g. per day). The total dose varied from 25 g. to 33 g. The effect on the vestibular system was checked by daily caloric tests according to the method of Hallpike.[5] The results appear to have been uniformly successful: the attacks of vertigo were completely or almost stopped for at least five to nine months, and in three out of the four cases the hearing was unaffected. In the dosage employed streptomycin produced what amounted to bilateral vestibular nerve section: the patients lost all reaction to labyrinthine stimulation. Violent rotation caused no nystagmus, and even iced water syringed into the ear for five minutes produced no reaction. The effect on locomotion varied with the previous functional efficiency of the vestibule and the age of the subject: if the disease had caused slight damage to the labyrinth the immediate result of streptomycin administration was severe vertigo such as is seen after surgical ablation of the labyrinth. The older the patient the less perfect was the compensation which ultimately took place. Compensation, however, was never complete, and all the patients subsequently found difficulty in walking in the dark. It would appear that this method of treatment merits further trial; as Fowler points out, it should be limited to those patients under the age of 50 with Ménière's disease affecting both vestibules in whom medical treatment has failed. Where the disease is unilateral the destruction of the labyrinth by alcohol injection or ablation is still the method of choice.

[1] *Acta oto-laryng., Stockh., Suppl.*, 1949, **75**.
[2] *Ann. Otol., etc., St. Louis*, 1947, **56**, 379.
[3] *Acta oto-laryng., Stockh., Suppl.*, 1949, **75**.
[4] *Trans. Amer. Acad. Ophthal. Otol.*, 1948, March–April, 293.
[5] Hallpike, C. S., and Cairns, H., *J. Laryng.*, 1938, **53**, 625.

EXPERIMENTAL INTERVERTEBRAL DISK LESIONS

It is now established that lesions of the intervertebral disk frequently cause low back pain and sciatica, and removal of the offending disk relieves these symptoms in a great many patients. Unfortunately this is not invariably the case; furthermore, spinal fusion has not been successful in relieving pain in patients whose symptoms persist after the removal of a prolapsed intervertebral disk. Haas[1] has shown experimentally that excision of the disk by an anterior approach will result in fusion of the adjacent vertebrae, and other workers[2 3] have reported that lesions similar to those noted in hypertrophic spondylitis can be caused by similar less extensive operations. Key and Ford[4] have recently produced intervertebral disk lesions by operations on dogs. They found that vigorous curettage of the disk space from the posterior approach did not lead to bony fusion between bodies of the vertebrae. The value of this procedure is therefore doubtful. Moreover, vigorous traction on the adjacent nerve root may be followed by

[1] *J. Bone Jt Surg.*, 1946, **28**, 544.
[2] Keyes, D. C., and Compere, E. L., *ibid.*, 1932, **14**, 897.
[3] Lob, A., *Disch. Z. Chir.*, 1933, **240**, 421.
[4] *J. Bone Jt Surg.*, 1948, **30**-A, 621.
[5] *Arch. Dis. Childh.*, 1943, **18**, 102.
[6] *British Medical Journal*, 1949, **1**, 132.

excessive fibrosis in this region, and the constant presence of adhesions around the nerve roots in the experimental animals suggests that this may be a cause of post-operative pain. As a result of these findings Key and Ford recommend that the disk should be carefully and gently removed, and that the posterior nerve roots should be protected from trauma.

These observers also found that unilateral protrusion of a disk will follow the surgical weakening of the annulus fibrosus on that side. The superficial portion of the wound so made heals over, but there appears to be no power of healing in the deeper part of the disk, probably because of its avascularity. In consequence a prolapse gradually develops. They even found it possible to produce a lesion of the intervertebral disk by puncturing the annular fibrosis with a needle. It is interesting to note that the animals subjected to this experiment were young, for in 1943 Findlay and Kemp[5] described osteomyelitis of the second and third lumbar vertebrae with collapse of the intervening intervertebral disk in a 1-month-old child. This lesion followed an attempt at lumbar puncture in the presence of skin sepsis. Recently Bromley, Craig, and Kessel[6] have reported in this *Journal* a case of osteomyelitis of the third and fourth lumbar vertebrae associated with partial collapse of the intervening disk. Four years previously, when the patient was 12 years of age, lumbar puncture had been performed while she was suffering from meningococcal meningitis. In children the short distance between the skin and the disk, the thin annulus fibrosus, and the protrusion backwards of the disk under tension when the back is flexed for lumbar puncture all render this structure vulnerable to both infection and prolapse following damage by a lumbar puncture needle. It is obvious, therefore, that great care should be taken in the performance of lumbar puncture in order to minimize the danger of a prolapsed disk.

ABSORBABLE HAEMOSTATICS

Surgeons have long been haunted by the spectre of haemorrhage from inaccessible vessels. Much has been done by good lighting and exposure of the field of operation to reduce this danger, and much can be done by local pressure maintained with patience for many minutes if necessary. But in the rare case, even in experienced hands, packs or haemostats have had to be left in wounds, prolonging the period of danger for the patient and of worry for the surgeon. If they are left for more than 24 hours there is grave risk of infection, while their removal may restart the haemorrhage. The arrival of absorbable haemostatics has abolished these dangers, and several surgeons have reported on their usefulness.

Of the four substances in use oxidized cellulose, fibrin foam, and gelatin sponge have been developed in the U.S.A., and calcium alginate is a British product. All appear to be very effective haemostatics, and comparisons of the first three have shown them to be about equal in this capacity.[1] Oxidized cellulose, however, has the disadvantages that it is highly acid and so inactivates thrombin and penicillin, and it does not adhere so firmly as does gelatin; moreover, it has to be sterilized chemically with bacteriological control. There appears to be little difference in the efficacy of fibrin foam and gelatin sponge, but fibrin is more complicated to use and to sterilize and is more easily broken up. Gelatin sponge, which can be sterilized by dry heat, is inexpensive, non-antigenic, non-irritant, and does not inactivate antibiotics or thrombin. Its efficiency as a haemostatic has been shown by its use to cover actual defects in large veins[2] and for wounds of the heart.[3] Large nephrotomy incisions, extending into the renal pelvis, healed well without leakage of urine after packing with gelatin foam.[4] A further application of absorbable haemostatics is for packing large cavities which have rigid walls. A notable example is the use of gelatin foam in the pleural cavity after pneumonectomy.[5] Provided too large amounts are not used, dogs and rats tolerate it well. It stabilizes the mediastinum and reduces greatly the amount of fibrinous exudate, and at the same time it does not interfere with repair. If infection is present the gelatin is rapidly liquefied and does not aid the infective process. This experimental work suggests that gelatin foam will have a valuable place in thoracic surgery.

Calcium alginate gauze has been shown to be a useful haemostatic in liver wounds in cats,[6] and it has the merit that it can be sterilized by autoclaving. It appears to be well tolerated in the tissues, and no untoward reactions were observed. There can be little doubt that the use of these and other absorbable haemostatics will increase, especially for arresting troublesome haemorrhage.

1 Jenkins, H. P., Janda, R., and Clarke, J., *Surgery*, 1946, **20**, 124.
2 ——, ——, *Ann. Surg.*, 1946, **124**, 952.
3 Nichols, H. M., Boyden, A. M., and Goodman, M. J., *W. J. Surg. Obstet. Gynec.*, 1948, **56**, viii.
4 MacDonald, S. A., and Mathews, W. H., *Canad. med. Ass. J.*, 1948, **58**, 118.
5 Small, J. T., Clagett, O. T., and Grindlay, J. H., *Proc. Mayo Clin.*, 1947, **22**, 585.
6 Blaine, G., *Ann. Surg.*, 1947, **125**, 102.

MEDICO-SOCIAL WORK IN V.D. CLINICS

Now that gonorrhoea and syphilis are so amenable to treatment, at all events in their early stages, more social and epidemiological studies are being undertaken with the object of finding out how the venereal diseases can be completely eliminated. Before the recent war almoners and social workers were employed in only a few of the larger V.D. clinics, and most stress was laid on treatment as a means of reducing the incidence of V.D. During the war contact tracing became an accepted practice, especially after some highly trained American nurses showed what it could accomplish, and consequently many more patients attended the clinics. All patients must be impressed with the necessity for continuing treatment, and defaulters must be followed up. There is, however, much more in the V.D. problem than this. Why are people promiscuous? Where are they promiscuous? Where do the uninfected meet the infected? Why do they not report for examination and treatment? Why do they default? Macfarlane has recently given answers to these and other questions in a report on the results achieved by a medico-social unit set up in connexion with the V.D. department at the Newcastle General Hospital. The unit consisted of an almoner with assistants, clerical staff, and three full-time and three part-time health visitors. An analysis of the records of 1,000 patients attending the department revealed the following facts: 82% received some assistance from the unit; 1,560 contacts were brought to examination, and of these 70% were suffering from gonorrhoea or syphilis or both; 74% of the 1,000 patients were married; public houses were far the commonest meeting-places. Personal factors leading to promiscuity included unhappy homes, criminal tendencies, poor to moderate intelligence, irreligion, ill use of leisure, drab lives, drinking, and poor moral fibre. Long-term plans for the reduction of V.D. must take these causes of promiscuity into consideration.

Defaulters are common in all V.D. clinics, and in Newcastle they are written to and visited. Of 3,478 defaulting women, 2,032 reattended as a result of 6,344 letters and 5,195 visits, and 70% of male patients responded to one of two communications. These figures indicate the amount of labour involved. The main reasons for default includ

1 *Publ. Hlth, Lond.*, 1948, **62**, 4.
2 *J. vener. Dis. Inform.*, 1948, **29**, 296.

difficulty of leaving work, illness, domestic troubles, and irresponsibility: it is clear that an efficient medico-social unit can help patients to overcome some of these handicaps. Penicillin treatment is considered to have increased defaulting because it shortens the period during which signs and symptoms persist. Inadequately treated syphilitic patients are a danger to themselves and to the community, and Macfarlane thinks that when adequate treatment can be obtained without difficulty such patients should be compelled to complete their treatment.

There can be no doubt that education, particularly sex education, is likely to be the most effective single method of solving the V.D. problem. Stokes[2] considers that the object of sex education is "to place reason in control of emotion without emotion losing its colourful and revivifying vitality." In his opinion sex education should begin at an early age, and if the educators—parents, school-teachers, doctors, and clergymen—are themselves ill-equipped to give the necessary instruction they must be educated first. Since promiscuity is the most important cause of the venereal diseases, it seems unlikely that any method of control will eliminate them until people cease to be promiscuous.

VOLUNTARY SOCIETIES AND THE STATE

The place of a voluntary society in a democratic State is rather like that of a doctor in his practice—the better it does its work the more likely it is to find its occupation gone. Some voluntary associations are complaining that under the Health Act their work has been taken over by the Government and there is nothing left for them to do. They do not always appreciate the compliment the State has paid them, and they may be inclined to overlook that even in a nationalized service there are plenty of outlets for voluntary effort. The value of the personal touch in services which are likely to become more and more impersonal cannot be overestimated. As Lord Beveridge[1] has pointed out, a "good" society cannot be made without voluntary action for social advance, even in what he calls a "social service State."

The Earl of Cranbrook, a member of the Royal Commission on Population, was announced to speak on the report of that Commission at the annual meeting of the Family Planning Association on May 28, but, because of delay in the publication of the report, he gave instead an informative and amusing dissertation on the place of voluntary societies, of which, he said, he had learned a great deal while sitting on the Commission. He divided them into two overlapping groups—the propagandist and the functional. One of the earliest examples of the former was the society founded by Wilberforce to combat the slave trade. In the functional group the friendly societies were among the first. Lord Cranbrook admitted that sometimes the voluntary societies were the resort of fanatics—people in whose bonnets was such a buzzing that they could hear nothing else. But even fanatics, he said, had their purpose; by their countering influences they helped a man to keep in the middle of the road, avoiding both intolerance on the one hand and indifference on the other, and he said that if he had a son who was a research student he would counsel him to subscribe to an anti-vivisectionist society just to maintain his poise. He had recently visited Germany, where he was unable to find any voluntary societies, with the result that the sort of work which such societies did here, and pressure groups did in the United States, was done by the various political parties, so that everything became more and more a "party" matter. It is to be hoped that the tendency for local councils, which now undertake so much of the work begun by voluntary agencies, to divide themselves into political groups will not have the same result.

Another advantage which Lord Cranbrook found in voluntary societies was that they gave earnest people an opportunity to put in "overtime" for the benefit of the community. Many local health authorities have tried as far as possible to give the old voluntary organizations a place in their schemes, both because the latter had the experience and also because the authorities could enlist "sweated" labour without any pricking of conscience. Many people were glad to continue voluntary service; it was not uncommon for volunteers to serve as drivers and attendants in ambulance services taken over by local authorities. Lord Cranbrook did not develop an idea which he left with his audience, that there might be a voluntary organization new to this country, which might incur as much odium as Wilberforce's and yet be as successful in getting its idea accepted—namely, a society which would endeavour to ensure that useful citizens did not grow into a useless elderly dotage.

[1] *Voluntary Action—A Report on Methods of Social Advance*, 1948, London. See also leading article in the *British Medical Journal*, 1948, **2**, 792.

CLIMATE AND RHEUMATISM

The effect of climate on the cause and development of rheumatic diseases has hitherto been judged mainly by popular impressions rather than scientific research, though some papers of interest based upon careful observation, especially on humidity, were published in the old *Journal of Balneology and Climatology*. A serious obstacle to research has always been the difficulty of finding observers and persons willing to be kept under strict experimental conditions for sufficient length of time. Recently, however, the subject has attracted attention in Sweden, and Edström and his colleagues[1] at the University of Lund have studied the effect of hot, dry climatic conditions on rheumatic patients over a period of six years. A hospital ward of two beds was equipped as a climatic laboratory with double walls and ceiling, so that temperature and humidity could be maintained at any desired level.

In this "laboratory" sixteen patients in a late stage of rheumatic fever and eighteen patients with rheumatoid arthritis have been treated, each of them for a period of about three months, during which they were not allowed to leave the ward for any purpose. The room was maintained at a temperature of 89.5° F. (32° C.) with a relative humidity of 35%; these conditions were found to be comfortable. The authors observed that the skin temperature of the extremities became higher and that peripheral vasoconstriction was changed to vasodilatation; the oxygen saturation of the blood rose from a level of 51% in a room at 68° F. (20° C.) to 82% in the special ward; the cardiac output of normal hearts was unchanged; and in most cases the calorie consumption and the basal metabolic rate were also unchanged. Cultures of the throat flora were taken in all cases, and β-haemolytic streptococci were present at the outset in eleven of the patients with rheumatic fever and thirteen of the patients with rheumatoid arthritis; in 22 of these patients the streptococci disappeared. This interesting observation supports the view that hot, dry climates may be of benefit in rheumatic diseases. The principal effects on the symptoms and signs of disease were lessening of peri-articular swelling, diminished pain and stiffness, larger appetite, and improved circulation. No tendency to recurrence after return to normal room temperatures was observed in any case. The results of this remarkable piece of clinical research are of value as a study in metabolism, but cannot be of much assistance in the treatment of rheumatism in practice.

[1] *Ann. rheum. Dis.*, 1948, **7**, 76.

MEDICAL SCHOOL IN JERUSALEM

THE HEBREW UNIVERSITY'S NEW FACULTY

[FROM A CORRESPONDENT]

The Undergraduate Medical School of the Hebrew University of Jerusalem was formally opened by Sir Leon Simon, chairman of the Executive Council, on May 17, in the presence of the Prime Minister and other notabilities. The Hebrew University has had for many years full teaching faculties of science, arts, and agriculture, and before the war was planning a faculty of medicine.

A new hospital of some 300 beds was built on Mount Scopus together with laboratories for pathology, bacteriology, parasitology, and hormone and cancer research. Before teaching could be started it was necessary to enlarge the institutes of chemistry, physics, and biology, and to provide accommodation for departments of anatomy, physiology, and pharmacology. The war stopped progress along these lines and post-war disturbances slowed down the rebuilding programme.

At the end of the British Mandate and with the outbreak of Arab–Jewish fighting the university area was completely cut off from the Jewish part of Jerusalem and all work there came to a standstill. Fearing this development, the Jewish authorities had removed as much of the hospital and laboratory equipment as possible into the New City and had fitted up temporary accommodation. These makeshift hospitals cared for many thousands of sick and wounded in Jerusalem.

Among the volunteers who helped the Israeli Army during the fighting were medical students from many countries who had left their work at different stages in their curriculum and who, when the fighting ended, either could not or did not wish to return to their former medical schools. The Israeli Government and the University naturally felt that they were morally bound to assist these men to complete their training, and so a medical school has been opened in what must surely be unique circumstances. As the University still has no access to its own buildings all the teaching will have to take place in the present temporary quarters.

Ex-Service men who have passed their second M.B. examination are being admitted to clinical courses which will be adjusted to their special circumstances and will lead to a degree in medicine. Students who have done most of their preclinical work will be given revision courses, which will of necessity consist mainly of lecture work, and will proceed to a special second M.B. examination. Finally, new students are being accepted for the equivalent of a first M.B. course, which will extend over two years.

Return to Mount Scopus

It is hoped that during the coming months relations with Transjordan may improve sufficiently to enable the University to return to its own home on Mount Scopus, where normal teaching and research could be resumed. The medical school will be quite small, admitting about 50 students a year, and later may accept some dental students also. Buildings still to be erected will cost about £1,000,000, and several years may elapse before they are ready for use. The completed medical school will be well equipped on modern lines. The teachers are of high standing and extremely keen, and there is every reason to hope that the new school will become one of the leading institutions of its kind in the Middle East.

The present prospects for the medical profession in Israel are not bright. There are more doctors in the country than are really needed. The chief medical insurance organization, the Workers Sick Fund, which employs a good many whole-time doctors to serve the needs of the workers in the chief trade unions, pays its doctors badly and works them hard. Private practice is rapidly dwindling, because all the new immigrants and all the men and women called up for National Service, and their families, are automatically made members of the Workers Sick Fund, and the minimum number of additional new doctors is then engaged by the Fund. There is talk of a National Health Service to be organized by the Israeli Government. Some account of this proposal was given in the *Journal* of May 7 (p. 817). Unfortunately the bargaining position of the doctors is extremely weak, and there is a grave danger that most of the doctors in Israel may have their standard of living reduced below that of skilled craftsmen, taxi-drivers, or building labourers. It is to be hoped that the Israeli Government and the trade union organizations which so greatly influence government policy will appreciate that in the long run it is wise to maintain the status of medicine as a learned and honourable profession.

CONTROL OF TRYPANOSOMIASIS

INSECTICIDES AND ANTRYCIDE

The relation of the recently discovered "antrycide" to the problem of tsetse-fly disease was the subject of an address by Dr. D. G. Davey, one of the team responsible for the work on this drug, at a joint meeting of the Royal Empire and Royal African Societies on May 25.

On the value of insecticides in general in the control of tsetse-fly disease Dr. Davey expressed some scepticism. Both D.D.T. and gammexane killed the tsetse fly easily and quickly if they were brought into contact with it. Extermination was difficult enough even when small pockets of tsetse country were being treated, but in continuous stretches of bush extending for hundreds of miles it was well-nigh impossible. Work had therefore been directed to the discovery of a drug which could be given to domestic animals to kill any trypanosomes and to protect them from further infection.

The task of fashioning the drug—very much a matter of trial and error—was carried out by a team of biologists, synthetic chemists, and biochemists, assisted by hundreds of mice, with some rats and rabbits. Modern drugs, Dr. Davey pointed out, were "fine tools that only interfere, as it were, with the free life of the organisms that cause disease, rather than cudgels which bludgeon them out of existence."

The properties which a drug for this purpose must possess were: (1) the ability to cure animals infected with the disease, and, moreover, to cure them with a single dose, preferably given under the skin; (2) an action not confined to one species or organism; (3) a certain flexibility allowing a considerable margin of error in its use; and (4) prophylactic powers. It is claimed that antrycide possessed these properties in greater measure than any other drug. With the co-operation of the Colonial Office and the Sudan Government, field trials of antrycide had been made in East Africa and the Sudan, and it had been shown that the curative powers of the drug were good, that its action extended not only to trypanosomes commonly found in cattle but also to those in horses and dogs, that it conferred on treated cattle a protection lasting several months, and that it was simple to use. Not sufficient was known about antrycide as yet to state its positive failings. Only further trials would show what contribution to the development of Africa it could make.

Resistant Strains

Dr. Davey went on to indicate some difficulties which lay foresaw. These were not confined to antrycide alone. It was possible, for example, that as the use of the drug extended over the enormous territory of Africa strains of trypanosomes would be encountered which would behave differently from those treated already. Again, the misuse or abuse of antrycide might lead to the production of artificially resistant strains. Many of the people who would be employed in the administration of the drug would be lacking in a sense of responsibility, to say the least, and others might be frankly dishonest in measuring doses, and, should this happen, then sooner or later the trypanosomes would become trained to resist even full doses.

A third potential failing was bound up with this possibility of the development of resistant strains. When a drug was given to confer protection on an animal the protection did not last for ever; the drug was slowly eliminated, and eventually a time came when the amount present was insufficient to help to kill trypanosomes, yet this very small concentration of drug might yet be sufficient to influence future behaviour to the drug, so that the trypanosomes would be trained to resist higher concentrations.

At present there seemed to be two main ways of settling a tsetse area. The first was to try to persuade people to enter the area without animals; this was extremely difficult. The other way was to clear the area before the people entered, and this was very expensive. Now a third way would become possible. People might enter virgin tsetse country with their cattle protected by antrycide, and know that their animals would remain fit and healthy for from four to seven months. They could then be re-treated and a further period of protection obtained, and perhaps a third and a fourth, and during this period, covering two years or so, because of the presence of people the game would have receded and the reservoir of infection would have dwindled.

Dr. Davey said that he had been particularly impressed by an experiment done in Kenya. Just over a hundred miles from Nairobi, lying alongside the Mombasa-Nairobi road, was a heavily infested tsetse area. In it was a map point—it could hardly be called a place—called Kiboko. Cattle were put into Kiboko last October, some treated and some untreated. The first of the untreated cattle died five weeks after it entered the area; the last was dead within eleven weeks. One or more of the treated cattle started to look ill rather more than four months after their entry into the fly area; many of them still looked fit, and some of them were apparently free of infection after six months amongst the tsetse fly.

ALEXANDER PIGOTT WERNHER MEMORIAL TRUST FUND

In accordance with a scheme approved by the trustees, an allocation of £4,000 per annum has been made for the award of travelling fellowships or grants in furtherance of the objects of the Fund, which are defined as being "the prevention and cure of blindness and deafness in the United Kingdom and British Empire, and in particular research in connexion therewith by financing medical men and students within the Empire to study methods and practices in all countries of the world." These awards will be made primarily for research in ophthalmology and otology for periods of up to a year, but grants may also be given for short-term visits abroad to study new methods of investigation and treatment in these fields. These funds will be administered by the Medical Research Council, and applications should accordingly be addressed to the secretary of the Council, 38, Old Queen Street, Westminster, London, S.W.1.

Reports of Societies

PREGNANCY AND TUBERCULOSIS

A joint meeting of the Newcastle-upon-Tyne Obstetrical and Gynaecological Society and the North of England Tuberculosis Society was held on March 25 in the Medical School, King's College, Newcastle-upon-Tyne.

Professor E. FARQUHAR MURRAY, president of the Obstetrical Society, was in the chair. He said that, while no one would dispute the inadvisability of a tuberculous mother undergoing the strain of lactation, the effect of pregnancy on the tuberculous process and particularly on its ultimate prognosis was still obscure. In many cases where termination had been advised there appeared to be doubt about the activity of the disease, and even when the disease was active doubt remained about whether termination of the pregnancy was really justifiable or not. His considered opinion was that those cases which were going to improve did so, and those doomed from the start went steadily downhill whether pregnant or not and in spite of treatment.

After stressing that young women with tuberculosis should be advised not to marry or to become pregnant for at least a year after a clinical cure of the tuberculosis, he asked what were the criteria of cure. He referred to the teaching that termination should be undertaken before the third month but not after that, and pointed out that this was illogical. Finally he said that a case might be made out for the induction of premature labour and forceps delivery in cases of respiratory embarrassment, particularly in cases with a recently induced artificial pneumothorax.

Analysis of Cases

Dr. ROWLANDS said that in his opinion pregnancy had no serious influence on the course of pulmonary tuberculosis, provided that the patient was treated appropriately both during the pregnancy and after the confinement. In the case of a seriously ill woman who became pregnant, termination of the pregnancy would not prevent a fatal termination of the disease; therefore the pregnancy should be allowed to go to term and the child, invariably quite healthy, should be allowed to survive.

The case records of 67 women who became pregnant while suffering from pulmonary tuberculosis had been examined and the results tabulated.

Total Cases (67)	Condition at time of Confinement		Following Confinement		Present Condition		
			Deterioration	No Deterioration	Disease Quiescent	Disease Still Active	Died
Sputum positive (32)	Quiescent	16	1	15	15	1	—
	Active	16	12	4	4	7	5
Sputum negative (by direct smear only) (35)	Quiescent	32	4	28	30	2	—
	Active	3	3	—	2	1	—

The histories of the 16 sputum-positive active cases were discussed. They showed that when the disease was advanced and treatment inadequate—usually because of the refusal of the patient to undergo institutional treatment—deterioration took place. This happened with 12 of the patients, and 5 died. Four who had adequate treatment during and following the pregnancy continued to make satisfactory progress and eventually became quiescent. In the case of one woman, who was delivered of an illegitimate child, deterioration and eventual death could be ascribed partly to psychological changes. Another of the deaths did not take place until three years after the confinement; deterioration was not noticed until nearly two years after the baby was born and could not then be ascribed to the effects of pregnancy.

The great majority of the other 51 cases had had treatment of one sort or another before they became pregnant, with control of the disease in most cases. Where the disease was quiescent before pregnancy the risk of breakdown was slight, and if it did take place could be checked comparatively easily by proper rest and treatment. Only in cases of active open tuberculosis was deterioration to be expected, but not more so than could be looked for in a comparable stage of the disease in non-pregnant women.

Controlled Investigations

Dr. WOLLASTON pointed out that radiological examinations at antenatal clinics showed an incidence of tuberculosis no greater than in comparable groups. Out of 379 consecutive female admissions to sanatoria only 24 had been pregnant within the previous twelve months. Breakdown of a quiescent lesion during pregnancy could be expected in 7% to 10% of cases, but follow-up of female patients whose disease was quiescent on discharge from sanatoria revealed a relapse rate of 11.3%. In the active cases most writers considered that deterioration was accelerated by pregnancy, but Cohen's deterioration rate of 30% should be compared with the relapse rate of 34% for all female patients discharged from sanatoria. Steward and Simmond's controlled investigation showed no statistical difference in the deterioration rate between comparable series of pregnant and non-pregnant women, in both quiescent and active series of cases.

He considered that pregnancy and child-bearing played little part in the onset and relapse of pulmonary tuberculosis. The important factors were those governing the management of any case of tuberculosis: early and adequate treatment, environmental and economic factors, and the psychological reaction of the mother. Pregnant women should have priority in admission to sanatoria so that the lesion could be brought under control before labour. Collapse therapy should be undertaken whenever possible and without delay; it would save more lives than termination of pregnancy. The strains and stresses, anxiety

and worry, and lack of rest that played so large a part in causing relapse were aggravated by child-rearing, and the difficulties in bringing up a child must be taken into account when the question of termination was considered. No tuberculous patient should bring up a child without help in the home, especially at night, for the early months. The mother of the unwanted child or the mother who was frightened of pregnancy was far more likely to break down than the mother who was anxious to have a child; in the latter type of cases improvement might follow.

In conclusion Dr. Wollaston suggested that termination of pregnancy, because of the effects of pregnancy, was indicated only when there was a spreading toxic lesion uncontrollable by treatment; but he thought termination was often indicated for reasons indirectly connected with the pregnancy.

Bone and Joint Tuberculosis

Mr. KENNETH STANGER said there were four problems to be considered in cases of bone and joint tuberculosis associated with pregnancy: (1) Was there any evidence of pregnancy lowering the general resistance to tuberculosis and predisposing to the appearance of a skeletal lesion? (2) Whether pregnancy during the active phase of such a lesion had any aggravating effect. (3) If pregnancy occurred rapidly after the lesion had been considered quiescent, was there any increased risk of recrudescence, and, if so, what was a safe interval to allow before pregnancy? (4) What were the possible mechanical problems which might arise and affect pregnancy or delivery?

There were many difficulties in the study of this problem. He had had the opportunity of seeing and treating most of the cases from Newcastle, Gateshead, and Northumberland for 10 years, numbering in all over 400 cases, but the number in which the relationship of pregnancy to tuberculosis could be considered was narrowed to 18 cases.

These 18 cases were described. In this small series pregnancy did seem to diminish the resistance of the patient and predispose to an osseous lesion. Pregnancy occurring during the active phase of the disease had an aggravating effect, but with careful management no permanent ill effects had been noted. In those cases of pregnancy occurring within three years of the disease being recorded as quiescent, two had been reactivated and two were unaffected, one being a case of sacro-iliac tuberculosis delivered normally without ill effect. Finally, the mechanical problems which might arise, such as a large psoas abscess or a lumbar kyphosis, seemed to have no ill effects on the course of pregnancy.

In the discussion which followed, the question of the induction of pneumoperitoneum immediately following delivery, in order to ensure that the diaphragm did not descend too rapidly, was also raised. The general view was that this was an inadequate form of therapy and that other methods of ensuring elevation of the diaphragm—for example, phrenic crush—were more certain and therefore preferable.

TUBAL MOLE

At a meeting of the North of England Obstetrical and Gynaecological Society held in the Algernon Firth Pathological Department, Leeds, on May 20 the chair was taken by the president, Mr. S. B. HERD.

Professor ANDREW M. CLAYE described the case of a patient of 28 with fever and left-sided abdominal pain five days after delivery. Conservative treatment was instituted, but three days later, as severe pain with fever was still present, the abdomen was opened and a left tubal mole surrounded by matted gut was found and removed. The diagnosis was confirmed microscopically and the patient made a satisfactory recovery. She had had simultaneous intrauterine and extrauterine pregnancies, but she had not subsequently had a further pregnancy. Professor Claye also mentioned a case of ectopic gestation eight months after sterilization by ligating, crushing, and excising a portion of each tube, after which the stumps were buried in the broad ligament.

Dr. H. DOBERMAN described a case of tuberculous cervicitis. Mr. H. AGAR discussed the spontaneous rupture of the uterus during pregnancy in a primigravida, and Mr. D. W. CURRIE reviewed the treatment of stress incontinence.

Nova et Vetera

A SUCCESSFULLY OPERATED CASE OF MEMBRANOUS OCCLUSION OF THE ANUS IN THE SEVENTEENTH CENTURY

The Justices of Peace in the seventeenth century were not a judicial body only; they acted in many ways like the local government authorities of later times. Among their various functions was the relief of the poor. According to the Poor Law Act, 1601, the parishes had to supply the relief, in cash or in kind, and had to appoint the overseers. The general supervision, however, rested with the Justices of Peace, who had the right to levy rates on the parishes or, when necessary, in bigger areas such as Hundreds.

Among the applications to the Quarter Sessions at Manchester which are preserved in the Lancashire Record Office are a number asking for financial support. Some of the applicants based their claims on medical grounds. We have published two such applications in which it is stated that syphilis had been the cause of the distress (Sharpe France and Fessler, *Brit. J. vener. Dis.*, 1945, **21**, 177). Not only are the applications, with their description of illness, interesting from the medical point of view, but they are important in that they give some information about the social background of medicine.

Below is the application* of a man from Chadderton (near Oldham), who, in asking for relief and complaining about the overseers, traces his poverty back to the expenses which he had when one of his children, born with a deformity, had been successfully operated on. It seems that it was a case of membranous occlusion of the anus. Aggravating his plight was the factor that his wife could not feed any of her four babies, and that it was necessary to use a "suckling-box." The decision of the Quarter Sessions is sometimes preserved in a marginal note on the application. Unfortunately in this instance there is not such a note, and we do not know whether the Justices of Peace were impressed by the facts reported in the application and granted help.

Midsummer, 1677.

"To the Right Worshipfull the Justices of peace and Quorum at the quarter sessions at Manchester these

"Humbly sheweth that your poore pettitioner John Bexwick of Chaderton being a very poore man having a wife and fowre smalle children and his wife neare down lying and the second childe that wass borne wass without any Ishu at his fundament which put me to great charges for I was forced to sell my clothes and my wifs withall that I could mak any money of which wass the first begining of my poverty for this strange distemper which my child was afflicted with made mee think there as nó help which caused mee with the advice of my neybers to send for the minister to crissen my childe, which when he came he demanded of me the cause why I sent for him the childe being so livly and no syne of death which some neigbour women that were in the house declared the cause and did shoe him the greefe which when he saw he took the pains to write to Docter Potter which when he heard of it he sent his man with all hast possible to Docter Hartly of this towne and they were all three at my pore house that same night and taking advice one with another with my consent they tooke the thing in hand and by the dilligent use of means and the blessing of god my child is brought to his naturall use of voyding his excriments and forthemore my wife hath not had anny suck at all for anny childe that shee hath had but been forced to norrish them up with suckling box which hath put me to great unconvenyanc as your Worships very well know, and I have beene at the overseers offten times but they height me so that I get nothing but faire speeches for they very well know my nessisity for it is very well know among my neighbours that I have been laborrious and dilligent in my place to maintaine my family if possibly I could and my wife being in this condition I must needs have som woman with her till god inable her againe and without some relief I cannot therefore I humbly desire your Worships to tak it in to consideration and grant me some lykly thing to mentaine my wife and small children which otherwise are lykly to perrish and your poore petitioner [sic] will pray for your Worships health and happiness."

R. SHARPE FRANCE, F.S.A., F.R.Hist.S.
A. FESSLER, M.R.C.S., L.R.C.P.

*QSP 469/16.

Correspondence

Acute "Infective" Polyneuritis

SIR,—May I supplement your valuable annotation on acute infective polyneuritis (May 28, p. 950) by some clinical and terminological notes that may be worth record?

The onset and progress of the illness may be very much more rapid than the annotation mentions, and profound paralysis of all limbs may ensue within 36 hours of the initial awareness of weakness at the ankles by the patient. This fulminating sequence may come "out of the sky" in a subject apparently enjoying normal health until the weakness and paraesthesiae appear. In such cases, too, death may occur within the week, not necessarily or even commonly from paralysis of respiratory muscles, though these may be weakened, but from an increasingly rapid heart action and right-sided dilatation and failure. Indeed, no balanced picture of this malady can be formed that does not take into account the associated involvement of the myocardium, which is not seldom its gravest feature and one giving the physician his most serious apprehensions for the patient.

In that too little known and incomparable account of what he called "acute pernicious beri-beri" Hamilton Wright[1] gives a vivid and accurate description of this mode of death in another variant of polyneuritis. In some instances, however, the death is sudden, as when a patient is sat up in bed for the pillows to be rearranged and dies suddenly while this is being done.

On the other hand, progressive paralysis of the respiratory muscles may terminate the illness. Many patients hang between life and death from one or other of these causes for several days, suffering a characteristic insomnia that is refractory to medication in safe dosage. Abdominal distension may be extreme and gravely embarrass a weakened respiratory musculature so that it calls urgently for relief.

The facial paralysis which is the rule follows that of the limbs within a few days, but is not always bilaterally simultaneous in onset. In the first few critical days, even if the probability of death seems past, it is not in my experience possible to say which patients will make the rapid recovery so typical of the illness and which will linger for many months with no material restoration of power. The wasting that ensues in the latter group still further delays recovery.

Since cardiac failure is so often in question in fatal cases, the use of the respirator is apt to be disappointing, though the apparatus should always be standing by during the initial developing stage of the illness. A depressing feature is the uniform inefficacy of all forms of medication, and this applies to the most massive dosage with vitamin B_1.

The eponym Guillain-Barré syndrome serves no good purpose. It is not informative and tends to make it appear that something other than an acute polyneuritis is in question. As your annotation remarks, the features of the cerebrospinal fluid described are not peculiar to the illness. On the other hand, to speak of it as "infective" has no justification, in that it makes an assumption for which there is no trace of evidence. The most acute cases give the observer the impression that the patient is being flooded by some toxin—whether endogenous or exogenous, derived from organisms or from a metabolic disturbance, no one can surmise; and, if a name has to be found, "acute toxic polyneuritis" is probably the one least open to objection. It does at least suggest our ignorance of the complex aetiology of the illness.—I am, etc.,

London, W.1. F. M. R. WALSHE.

REFERENCE

[1] *Studies from Inst. med. Res. Fed. Malay States*, 1903, vol. 2.

Tuberculosis in Industry

SIR,—I have read the article by Drs. Alice Stewart and J. P. W. Hughes (May 28, p. 926) with great interest, and should like to draw attention to two aspects of their work. First, they have a loose habit of expression which seems to me to betray a bias of mind in favour of the conclusions which are supposed to have been reached. I refer to their double use of the word "infected." They write, "The number of newly infected persons in any one factory ranged from. . . ." I think they mean, "The number of newly discovered cases of pulmonary tuberculosis ranged from . . . ", but their wording suggests that these patients had recently received their infection in the factory.

In the same paragraph we read, "The overall rate of infection was considerably higher in large factories than in small ones." No rates of infection are quoted, only incidence rates for pulmonary tuberculosis, which I suppose is what the authors mean. On the other hand, "Operatives often become infected during working hours" occurs in the last paragraph but one. Here they seem to mean the transference of bacilli from one worker to another, which is quite a different matter and very difficult to assess. Evidence of tuberculin testing and the observation of cases of primary tuberculosis among the workers should be adduced to support such a strong suggestion. In any case we are all at some time infected, and the important problem is why a few of us develop the disease.

This leads up to my second point. The dusty nature of the work should have been studied before the publication of conclusions affecting the boot and shoe industry and other industrial communities. I am informed that shoemaking is a dusty occupation in the main. Now, according to the Registrar-General's returns (quoted in *Tubercle*, 1946, **27**, 147) people in dusty occupations run a considerably greater risk of dying of phthisis than those in non-dusty trades, and this happens even though the dust does not give rise to any form of pneumoconiosis. May it not be that the secret of the high incidence of pulmonary tuberculosis in boot and shoe workers lies here?—I am, etc.,

London, W.1. STEPHEN HALL.

Post-operative Atelectasis

SIR,—I read with great interest the article, "Some Aspects of Partial Gastrectomy," by Mr. John Hosford (May 28, p. 929), and in particular his remarks concerning atelectasis and pulmonary complications, which of course are applicable to all major abdominal operations and particularly to thoraco-abdominal cases.

His plan of attack on the problem is good, but I feel it is well to stress the pre-atelectatic state of a patient who has a lot of thick tenacious mucopus in his larger bronchi which he either cannot or will not cough up no matter how much help or encouragement he receives by the ordinary conservative means. The type of patient to develop this state is the chronic bronchitic who, in spite of pre-operative prophylactic measures, on the second post-operative day rapidly fills his bronchi with mucopus, which rattles up and down so that it may be heard from the end of the bed. He is dyspnoeic and moderately cyanosed. Such a patient may be given the "stir up" methods advocated by Mr. Hosford, but there is another simple method which is all too infrequently used and which I can warmly recommend before resort to bronchoscopy.

This is to use blind intratracheal suction by means of a No. 10 or 12 soft rubber Jacques urethral catheter connected up to a portable theatre sucker. The sucker tubing and the catheter are connected together via a Y-glass connexion, the open limb of the Y being controlled by the thumb. One essential is that the sucker must develop a good negative pressure. The patient is propped up easily in bed, and the catheter, connected to the sucker, which is switched on, is passed through either nostril. As the tip enters the oral pharynx the thumb is opened and closed over the free end of the Y-tube, producing strong intermittent suction, and attempts are made to enter the trachea. This is usually easy and occurs after two or three attempts, the catheter no doubt being drawn in by the suction effect.

The presence of the catheter in an unanaesthetized trachea has the gratifying effect of making the patient cough vigorously, and it is perfectly easy, by suitably tilting the head, to guide the catheter into one or other main bronchus. By means of the intermittent suction produced by the thumb, aided by the associated coughing, the whole of the mucopus in the larger radicals of the bronchial tree can be removed, and it can be observed as it passes through the Y-connexion. As

much as one to two ounces can be removed at a session. The procedure is temporarily distressing to the patient and should not be persisted in too long, but the dramatic improvement after the manœuvre is gratifying to both patient and doctor.—I am, etc.,

London, W.C.2. ERIC M. NANSON.

Curare-modified E.C.T.

SIR,—I would like to make some comments on the article by Drs. Peter D. W. Shepherd and David C. Watt on curare-modified E.C.T. (April 30, p. 752) from experience of 350 administrations of thiopentone-curare in electric convulsion therapy and electro-narcosis for patients varying from the age of 19 to 75.

The dosage of *d*-tubocurarine of 2.5–3 mg. per stone (6.3 kg.) body weight is excessive. Personally I estimate the dosage on a basis of just under 2 mg. per stone and judge the actual amount from the age and physical condition of the patient, the result always being less than 2 mg. per stone for the first treatment. The amount can be modified for subsequent treatments; but I find that 2 mg. per stone is often unnecessary to produce adequate curarization, by which I mean slight forearm flexion and no movement (or perhaps very little) of trunk and lower limbs. A dose of 0.15–0.25 g. of thiopentone is surprisingly small, and in my experience more than this is needed to produce satisfactory results.

In E.C.T. the thiopentone has not to produce merely an initial unconsciousness but must keep the patient asleep during the three minutes while the curare is taking effect and, furthermore, keep him asleep until the curarization wears off. With a small dose of thiopentone a distressful and possibly noisy recovery of a partly curarized patient is likely to occur, even though the respiration has seemed quite satisfactory, with bitter complaint afterwards.

I use thiopentone 0.3–0.5 g. (more often 0.4–0.5 g.) rapidly given, and this gives a peaceful and not prolonged recovery, except in the case of the heavy pyknic type; in such there is a considerable risk of the larger dose of curare necessary, even after thiopentone 0.5 g., producing a curarized and difficult recovery. Here the sequence of thiopentone 0.5 g., curare, 2½ minutes' wait, thiopentone 0.15 g., ½ minute wait, shock, is more satisfactory than the usual routine. This is especially useful in the heavy type having electro-narcosis, for by this technique the second dose of thiopentone adds to the anaesthesia and potentiates the action of the curare at the latest possible moment, at the time when it is needed, with the result that curarization during treatment is better and recovery smoother. In electro-narcosis particularly, where the anaesthetic can easily wane during the treatment (possibly allowing the patient to retain a memory of the treatment if the current should be too low, and perhaps producing a reduction in curarization), better results both during treatment and afterwards are obtainable in this way.

In my opinion more trouble can be caused by a less than by a greater dose of thiopentone; 0.5 g., rapidly given to a large patient, can sometimes only just suffice, and in smaller patients even 0.4 g. does not give a slow recovery. As regards curare, idiosyncrasy must always be borne in mind until the first treatment has been undertaken, but in psychiatric work a test dose in an apprehensive, deeply depressed, or actively uncooperative or aggressive patient is often impossible and from a common-sense point of view is best avoided with such people.

With the dosages mentioned ventilation frequently need not be continued after the shock, and if it should be necessary one to three minutes usually suffices, by which time respiration is almost always quite satisfactory without any aid. Only in special cases (and it is seldom if dosage has been carefully estimated) is neostigmine needed. Its routine use is in my experience unnecessary, and adds to the number of venepunctures, which, at the best, are going to be many. I think it is worth recording that patients having had E.C.T. or electro-narcosis seem to recover more quickly from curare than do others. I have had few cases of idiosyncrasy, all mild except that of a man originally given 20 mg. of *d*-tubocurarine; he was afterwards adequately curarized with 8 mg. (with thiopentone 0.4 g.), recovering from this quickly and comfortably.

The injection is best given with the thiopentone first (rapidly, which in psychiatric patients is an advantage, as they are asleep almost before they know it) and the curare, mixed with atropine 1/60 gr. (1.1 mg.), immediately following through the same needle. I prefer the double injection, because with thiopentone first and alone an accurate assessment of the necessary dose can be made from the patient's reaction during injection, and, furthermore, thiopentone and atropine are said to be incompatible and their mixture is in my experience a lively source of phlebitis—common enough in any case after multiple venepuncture.

No mention is made in the paper of the difficulties encountered with the heavy pyknic type, particularly during recovery, and anyone first undertaking the curarization of E.C.T. cases should be aware of this. This type tends to recover in a state of partial curarization, and with a thick neck and awkward airway can sometimes be difficult to ventilate and keep a good colour. In such patients neostigmine can be of use. Bronchospasm, when it occasionally occurs, seems to be more likely in this type.

I do not think the Lucas resuscitator by any means the most convenient. The action of using the bellows tends to disturb the fit of the mask. I always use a Waters absorber outfit, with 5 in. (12.5 cm.) of corrugated tubing in place of the canister. The bag lies comfortably on the pillow beside the patient's head; the faintest respiratory excursion can be visibly estimated; and compression of the bag does not disturb the fit of the mask, which can be kept in apposition by Connell harness if desired. A Guedel airway is routine, unless the dentition is such as to contraindicate it at the moment of shock, when I change to a ring pessary, with the mask off. The mask can then be reapplied if desired, without removing the pessary, should treatment be continued with electro-narcosis.

Finally, a note of warning, given with some diffidence from an anaesthetist to psychiatrists: use curare with discretion, and only when experience in ventilating the apnoeic patient has been gained.—I am, etc.,

London, W.1. STEPHEN COFFIN.

Treatment of Rheumatoid Arthritis

SIR,—In view of the widespread interest aroused by your leading article on rheumatoid arthritis and its new treatment (May 7, p. 812) I hope that you will publish the following extract from a letter written in New York by my friend Dr. J. H. Young, of Australia, on May 31 and received by me three days later.

"This afternoon Hench gave his epoch-making paper and showed his motion-picture film. Unless you actually saw the results of compound E (cortisone, they have called it) both with regard to the apparent completely normal appearance and behaviour of the patients and with regard to pathology before and after, you would hardly believe it. The paper was presented modestly and simply to an audience of between 1,000 and 1,500—they came from far and wide. The ballroom of the Waldorf was packed. Patients who could barely walk are able to walk with complete freedom, run up and down steps, and jump—all within a week of starting treatment. Sections of synovial membrane taken before treatment show cells +++, and almost a normal appearance 10 days later in the same patient. Periarticular swelling and tenderness vanish as into thin air; weight increases rapidly; B.S.R. falls; anaemia disappears. It is almost beyond comprehension. In fact it is, for surely we must now regard rheumatoid arthritis as a 'relatively simple' functional disorder rather than a gross pathological disturbance.

"The results have already been confirmed in New York, Boston, Chicago, and San Francisco. I would rate this as one of the medical discoveries of the century, equal to insulin, sulphonamides, and penicillin. It opens up an entirely new field, and I feel that the time is not far distant when rheumatoid arthritis is wiped out. At present I would say that it has been used in moderately advanced cases—multiple joint involvement with much swelling, limitation, pain, and tenderness, but with little ulnar deflection and no subluxation. The patients relapse as soon as treatment stops."

This is indeed wonderful news.—I am, etc.,

London, W.1. JAMES CYRIAX.

SIR,—With the British and American newspaper cuttings piling up in mounds on the desks of all rheumatologists, they are all, I am sure, grateful to you for the scientific data reviewed in the leading article in the *Journal* of May 7 (p. 812).

Your review states, however, that, "so far as is known, none of the other compounds mentioned have yet been applied to treatment" in this country. Is it not surely fair to state that this hypothesis has long been held as relevant in British medicine by Verney, Bach, Greene, Ungar, myself, and many others? The American report is able to confirm the hypothesis by the availability of the supply of compound E, the essential factor missing from our British work. It may be recalled that as long ago as 1945 I wrote in the *Journal* (Nov. 10, p. 667) that it would appear that these rheumatic cases showed evidence

of pituitary hypofunction "more directly attributable to pituitary hormonal control," and that "interest was centred round the adrenocortical hormone of the anterior pituitary."

As was implied at that time, it became possible to treat two patients with the pituitary adrenocortical hormone as a result of the generous gift of the substance from Organon Laboratories. Both showed satisfactory improvement. Other cases were treated with desoxycorticosterone, as mentioned in your review, with negative results. A small number of records are available of cases treated with "pitressin," some of which were very successful from the rheumatic angle but the secondary effects were not so satisfactory. Finally, however, one now has records of some hundreds of rheumatoid arthritics treated with progesterone with a very fair percentage of improvement.

It is the side chain attached to the 17— position that is generally responsible for the activity of the sterol : the hydroxy group in position 11 is less important, for the 21-hydroxy-progesterone, which differs from corticosterone only in the absence of the 11-hydroxy group, is itself physiologically active as corticosterone. It is reasonable to hope, therefore, that a synthetic sterol may soon become available of greater potency for these rheumatic cases even than the compound E, in the same manner as the substitution of the ethinyl group for the hydroxy group in the 17— position of oestradiol, since other active groups of importance in rheumatism are known which substitute for the 17-hydroxy group. The treatment of rheumatoid arthritis with a sterol of the progesterone type therefore gains further support from the results achieved at the Mayo Clinic with the 17-hydroxy-11-dehydrocorticosterone. The origin of the treatment with progesterone was derived from purely biochemical grounds and forms an interesting correlative aspect to a similar termination.

I mention these features, therefore, in order to give a balanced picture from the British side, and to enlarge upon the facts that many of these similar sterones have been used and are being widely used in England now. The work at the Mayo Clinic is, as you have said, of the greatest importance, but mainly as a confirmatory proof to the hypotheses held here, which necessarily remained hypothetical until the adrenal or pituitary hormone concerned could be isolated in quantities sufficient for therapy.—I am, etc.,

London, W.1. HARRY COKE.

SIR,—I read the leading article (May 7, p. 812) on a new treatment of rheumatoid arthritis with very great interest. The remarkable conception of Selye that the adrenal cortex hormones may play a role in rheumatic and rheumatoid human conditions is based on experimental *animal* changes produced in joints and heart. Critically, it has to be stressed that there exists no evidence or even likelihood that these animal changes are identical with, or even similar to, human rheumatism. The latter is relatively a very frequent disease for which there is apparently no parallel in animal pathology.

The hypothesis that a deficiency of adrenocortical hormones is the decisive factor in the pathogenesis of rheumatic and rheumatoid conditions does not, however, seem to square with clinical observations. In hypocorticalism (e.g., Addison's disease) no rheumatic complaints, not to speak of arthritic affections, have been noted during a period of 100 years since its description. If the favourable results reported from the Mayo Clinic in a small number of cases should prove to be not of an ephemeral nature the efficacy of compound E (17-hydroxy-11-dehydrocorticosterone) is likely to be materially conditioned by its salt-activity—i.e., the changes of the Na:K ratio produced by it. It has been known that this ratio and the Na:K:Ca ratio have an important bearing on the autonomic nervous system and hence on the tonus of the capillaries and the local circulation. Factually Pemberton has postulated, and in my opinion rightly, that an impaired circulation represents the essential feature in the dynamic pathology of rheumatoid arthritis.

In this connexion it appears pertinent to point out that the writer has of late developed a new approach to and conception of rheumatoid arthritis. It consists in the working hypothesis that in this disease and allied conditions there exists a primary peri- and para-articular myopathy which leads as a secondary phenomenon to the well-known pathological changes in the joints, periarticular tissues, synovia, cartilage, and bones. The hypothesis will probably appear extremely unlikely, if not impossible, to most rheumatologists. But rheumatic myalgia ("fibrositis") is now capable of objective diagnosis by the localization of "myalgic spots," and is definitely curable by injection of small quantities of procaine.

The working hypothesis could therefore be subjected to a rigorous scientific test. By locating objectively myalgic spots in the muscles and in their tendons and ligaments near by and/or further away from the affected joints, and by injection of 1–2 ml. of procaine, spectacular therapeutic results have been obtained. It proved possible not only to relieve pain fully but to restore the function of the joints to a large extent even in crippled cases where the joints had been stiff and immovable for years. I maintain that the results, which were demonstrated at the Congress of Internal Medicine at Wiesbaden (April 25–28), are neither hypothetical nor due to exceptional favourable conditions, but can be obtained regularly in almost every case. They can be easily demonstrated and verified. Whatever the primary cause or causes may be, the factual results obtained are the stable pole in the ever-changing conceptions and theories of the pathology of rheumatoid arthritis.—I am, etc.,

London, N.W.11. M. G. GOOD.

Unusual Infections in Infants

SIR,—The letter by Dr. C. H. Johnson (May 7, p. 821) has been of great interest to me, as I have seen this month in a maternity unit a two-days-old baby with herpes zoster. The baby on the second day developed a rash on the right side, beginning on the right buttock and running down the right thigh, popliteal space, and dorsal side of left calf. The distribution of the rash followed the sciatic nerve and its cutaneous branches. The baby showed no signs of disturbance, no raised temperature, no loss of sleep or appetite. The delivery was normal, and the mother had a normal pregnancy and labour.

I would also like to report two further cases of interest that I have seen during the past few months in the same maternity unit.

(1) Cancrum oris: Female child born in September, 1948. Weight 9 lb. 4 oz. (4.2 kg.), normal delivery. Four days after birth I noticed a brown induration on the left cheek, and on close inspection I found on the inner side of the buccal mucosa a dirty brown patch covered with a grey ulcer. The baby's temperature was 103° F. (39.4° C.), her general condition was very poor, she cried unceasingly, and she was unable to suck or swallow. I ordered penicillin immediately, 5,000 units three-hourly. Spoon-feeding was unsuccessful, so I gave subcutaneous infusions of glucose saline. After two days there was very little improvement. I ordered sulphadiazine (2 g. in 100 ml. water—2 ml. three-hourly). From the fifth day of treatment the baby started to improve. The weight, which had gone down from 9 lb. 4 oz. to 7 lb. 2 oz. (3.23 kg.), steadily began to go up, and the temperature fell to 98°–99° F. (36.7°–37.2° C.). After two weeks the baby was discharged in very good condition. The total penicillin given during the seven days of treatment was 280,000 units, and sulphadiazine was 3 g. I feel that this case is well worth recording, as before the days of penicillin this would definitely have proved fatal.

(2) Osteomyelitis: On the twelfth day of birth of this baby by caesarean section it had a temperature of 102° (38.9° C.) and I noticed the right calf was swollen, red, and tender. The general condition steadily worsened. Suspecting osteomyelitis, I gave penicillin, 10,000 units three-hourly, and sent the baby to be *x*-rayed. The radiograph showed no abnormality, as was to be expected in the early acute phase. In spite of continued penicillin there appeared to be no improvement. I asked the advice of a surgeon, who admitted the baby to hospital. The leg was incised down to the bone and free pus evacuated. A later radiograph showed a picture typical of osteomyelitis. After several days the wound healed and the baby's condition improved.

—I am, etc.,

Fairford, Gloucestershire. N. TALERMAN.

Control of Paradoxical Respiration

SIR,—In the annotation (May 21, p. 908) on the control of paradoxical respiration there is no reference to mechanically controlled respiration. This method, in which the breathing is taken over by a machine, has been practised for several years both in this country and elsewhere for thoracic surgery, and was first done, I think, by C. Crafoord, of Sweden.

Considerable progress has been made, and the results are at least as satisfactory as those obtained by any other means. Several descriptive papers also have been published.—I am, etc.,

Manchester. K. B. PINSON.

Disseminated Sclerosis

SIR,—I read with interest Dr. Geoffrey Dean's article (May 14, p. 842) on disseminated sclerosis in South Africa. It is particularly interesting in that it confirms our impression that the disease is exceedingly rare among the white population in South Africa, and emphasizes an important comparison with the common occurrence of the disease in Great Britain.

I would like to say that we have tried treatment with copper in various forms on cases of established disseminated sclerosis, with no significant results, and that cases, while having copper therapy, actually had relapses. It may well be that we are not giving the right dosage or the right compound of copper. Considerable work remains to be done on the metabolism of copper in the body, and until this has been done it is impossible to say what part copper or other trace elements actually play in diseases of the nervous system.—I am, etc.,

Bristol, 2. A. M. G. CAMPBELL.

An Unfortunate Precedent

SIR,—Dr. A. P. Cawadias's letter (May 21, p. 910) is welcome. As one who has urged that representation of consultants and specialists is best done by Colleges plus B.M.A. I agree strongly. It is the duty of the Colleges in their spheres to do what the leading article in *Nature* (May 21) suggested in a different sphere: to "stimulate some more fundamental and critical thinking, and ask the vital questions." The most vital is the problem that has so far defeated mankind—how to adopt voluntarily the adaptive regulatory forces necessary to survival.

We recognize that such adaptive regulations are necessary; the arts are full of them, and an individual as such cannot exist in art or science. Professor H. L. Hawkins discussed them in his address as chairman of the Section of Geology of the British Association in 1936. Professor Raymond Pearl,[1] in his Heath Clark Lectures in 1937, said that, compared with those we needed to adopt, "those required during the glaciation of the greater part of the northern hemisphere seem insignificant by comparison." In his Harveian Oration last year Dr. F. M. R. Walshe[2] spoke of how "unhappily at the Renaissance we rejected the appeal to authority." Some of our individuality must be surrendered.

Professor Hawkins reviewed the results of failure to recognize such a necessity:

> "The history of extinct empires . . . should be studied as a cautionary tale. We always hope that the fate that befell our predecessors will pass us by. Babylon, Egypt, Rome, Spain, all traversed the same track; and to-day we follow in their footsteps hoping to reach some different goal . . . men are, for the most part, enthusiastic admirers of virtue, even to the extent of devising laws to ensure its maintenance . . . but in public affairs and in the mass they are often content to behave as animals rather than as men. . . . There is no doubt of man's ability to become the most successful type of animal that has ever existed; but the reward of success in that direction is death."

So, to quote Raymond Pearl:

> "No species has ever yet been able, in the long history of life on earth, to adapt itself swiftly and skilfully enough to survive. . . . Whether mankind will or not lies in the lap of the future. The problem presented to us is of a sort that statesmen, for the most part, are by their own natures and aptitudes, by their training, and in truth by the very nature of their business, quite unable to envisage or understand, and still less to do anything effective about. Some philosophers and men of science understand the problem well enough, but lack the power of a Caesar or the persuasiveness of a Pied Piper to lead mankind to a solution, even if they knew just the road to take to a practical solution. So, on the whole, man's only chance of coming successfully through the ghastly mess he is plainly in for would seem to lie, for what it may prove to be worth when put to the supreme test, in the fact that he has shown himself in the past to possess somewhat greater innate powers of adaptability than any other organism ever known."

This is man's problem and medicine's problem, and the old answer of complete freedom has been insufficient. Certainly too much regulation is equally wrong and insufficient, but somewhere between lies the answer that is right because [illegible] sufficient. It does not lie in the individual as such, though each of us must remember that we are the State: nor can it lie with the State as such, or at least as yet. Between the two must lie the smaller institutions, with a continuity derived to the individual, reaching back with one hand to the past with its "authority," its arts and traditions, and with the other grasping the present with its problems and dangers. Among these are the Colleges: for if reason, the liberal arts, philosophy, and authority have value, that value is needed outside the Colleges as well as within.—I am, etc.,

Hove, Sussex. W. A. BOURNE.

REFERENCES

1 *Natural History of Population*, 1939, London.
2 Reported in the *British Medical Journal*, 1948, **2**, 753.

Zoster and Varicella in the Same Patient

SIR,—I was recently asked to see a man of 69 who gave a history that some two weeks previously an eruption had appeared over the outer side of the right arm just below the shoulder. It spread fairly rapidly, and soon took the form of many small and large blisters. When I saw him he had very little pain, in spite of the fact that he was obviously suffering from a severe herpes zoster eruption, reaching from the shoulder to the wrist along the whole of the outer aspect of the right arm.

Some two days later I was again asked to see him, as he had developed a temperature of from 101–102° F. (38.3–39.9° C.), and a rash had begun to make its appearance on the body. This latter eruption rapidly spread to the face and limbs, and it was soon quite obvious that it was a typical varicella rash. Both the herpes and varicella pursued a fairly rapid and normal course to recovery.—I am, etc.,

Chesterfield. A. COURTS.

Physiology of the Orgasm

SIR,—I must offer my apologies to Dr. Charles Berg (May 14, p. 868) for what he considered to be an impolite comment on an extract from his book. I can assure him that there was no such intention behind my remarks.

I am glad to see that we seem to be in agreement on the physiological basis of the orgasm, and also to note that Dr. Berg considers it important that further research be directed to this important biological phenomenon. The problems raised by research into orgastic release of intrapsychic tension are scarcely likely to admit of easy solution.

Nevertheless, I would be grateful to you for the opportunity to submit a suggestion. While all cellular activity is accompanied by a greater or less degree of electrical disturbance, a convulsant process such as the orgasm should cause marked and easily recordable records. Along similar lines, we already possess E.E.G. records of the convulsant processes of epilepsy and electric shock. It seems to me that E.E.G. records of the orgasm should provide us with further valuable information. Test on experimental animals might well be a preliminary to later human records.—I am, etc.,

London, N.W.3. P. D. EEMAN.

Tumour Agents

SIR,—So far there has been no reply from Professor Gye to the questions in my letter in the *Journal* of April 9 (p. 632). While taking the opportunity of correcting a misprint—"particulate" for "particular"—I may be permitted to add a few comments on matters highly relevant to the present discussion.

Without detriment to the main argument, the question of the possible transmission of tumours by means of surviving cells may be disposed of by conceding without any reservation the point that no viable cells remain after the dehydration and freezing treatment. On the other hand, however, a chemical agent, allied to the homoiogenetic hormones of the embryologist and such as had been suggested by me in 1928 as the continuing cause or filterable agent, would be more likely than any virus to survive and, indeed, to increase in amount by such treatment. Moreover, the employment of inbred mice may have allowed Professor Gye to demonstrate the existence in *mammals* of a filterable agent of the type just referred to, the possibi[illegible]

occurrence of which, it may be mentioned in passing, had been suggested by me (*Edinb. med. J.*, 1929, **36**, 654).

Because of some confusion, especially in regard to the terms "carcinogen" and "carcinogenic" and their implications, I am unable to comprehend fully Sir Ernest Kennaway's remarks in his letter in the *Journal* of April 16 (p. 679). I imagine, however, that one thing which would determine the development of a Shope tumour in a cottontail rabbit would be whether or not it had been scratched when fighting by another rabbit, the bearer of such a tumour. In such a case the claws of the latter would almost certainly be contaminated with the virus through scratching its skin papillomata in order to relieve irritation. The onus of proof that "the first abnormal change in the fowl which produced the Chicken Sarcoma I of Murphy and Rous" (and, indeed, in animals treated with carcinogenic substances strictly so called) is the liberation in the tissue cells of commensal viruses rests with those who hold this view. No valid evidence has so far been submitted in support of such an out-of-the-way assumption : while on the other hand the one tumour definitely shown to be caused by a virus—namely, the Shope papilloma—when it becomes malignant, behaves in a manner very difficult to reconcile with such a view, since the virus, easily demonstrable in the non-malignant papilloma, ceases to be so at all in the malignant transformation.—I am, etc.,

Aberdeen. J. P. MCGOWAN.

Medical Fitness for Air Travel

SIR,—I have read with great interest the article (April 9, p. 603) by Sir Harold Whittingham, Dr. A. Buchanan Barbour, and Wing Commander J. C. Macgown on medical fitness for air travel. As a general guide for people who may be thinking of taking an air trip little fault can be found with it. But it must be realized that the commercial airlines in their ordinary flights perform a most useful function in taking home to England and elsewhere a large number of seriously ill people who require treatment which is not available to them locally.

During the last few months I have taken advantage of this and sent home a number of patients, all of whom, except one whose disease is not mentioned in the list, would have been excluded had the suggested tables been rigidly followed. That there was some risk of deterioration in sending them by air was appreciated, but this was thought to be small compared with that which would have been occasioned by obtaining a sea passage for them. For a short journey of only 2–3 days, with the prospect of being in skilled hands in his own country at the end of it, is something that an ill man can face up to however great the hardships may appear to him to be beforehand. From all those that I have sent home I have heard with gratitude of the ease and comfort of their air passage, which was accomplished without mishap of any kind.

The airlines which the three authors represent all receive large subsidies from the public purse, and in return for these they should provide all services that the taxpayer might reasonably regard as being of value to him. A most important one of these, I venture to suggest, is the provision of special facilities for British subjects whose illnesses demand a speedy passage home. I believe a most vital service could be the provision of a number of seats solely for invalids to be kept reserved up to, say, 10 days before the actual flight. If the airlines are pressed for space I have no doubt that these seats not required by invalids would be eagerly taken up by other travellers even at this short notice. These seats should be in pairs in case an attendant is required, put close to the lavatory, and have oxygen always available. Companies would, of course, provide safeguards to see that this privilege was not abused, and I am sure that the medical profession would do all they could to help.

A further great service could be provided by the distinguished authors if they would publish the facts on which their conclusions are based. Could we not have some figures, say, of the mortality for the different diseases per flight, so that we could then assess the risks that we might be advising our patients to run? I would be surprised, however, to find that for any ordinary severe illness, provided a few common-sense precautions are taken, this risk is any higher in an aeroplane than in an ordinary hospital bed.

I will refrain from criticizing the table in detail, but I would suggest that some of the conceptions envisaged in it are not quite in keeping with current medical practice. Also, is there any airline that will guarantee at the time of booking that the plane will travel under 5,000 feet?—I am, etc.,

Calcutta. ROGER LANE.

Pain in Childbirth

SIR,—There is no question that Dr. Kathleen Vaughan (May 14, p. 869) is right in stating that the squatting position is for the mother the easiest and most natural for childbearing. Why, then, is it not universal? It is, I think, due to the fact that, for the attendant, watching the perineum is difficult in such a position. If one is prepared to leave the case entirely to Nature, content to sew up any lacerations, complete or otherwise, then by all means adopt the squatting position in every normal case.

The easier and more rapid birth in that position, from the mother's point of view, is not, however, due to the weight of the child. I venture to say the weight of the child, within reasonable limits, is a very subordinate factor : if it were not so, then the heavier the child the easier the birth. We all know that is not true. The ease of passage depends on a multitude of factors too numerous to detail in a letter. The mechanism really is that of a half-screw—that is, a screw through 180°.

It is interesting to speculate that, in a way, the squatting position is imitative medicine. The mother assumes the position of the child—legs flexed on abdomen and arms flexed on chest. This gives a tremendous feeling of support and comfort, and reinforcement to the uterine abdominal aspect. An added advantage is that all secretions drain away from the field.

I do not like the dorsal position and prefer the left lateral. I have not found the complications in that position that Dr. Vaughan mentions. As for Dr. Grantly Dick Read's statement (April 16, p. 651) that the mother in some of his cases plays, as it were, obstetrical "ring of roses" with the partly born child, I can only infer that if this ever occurred it must have been in persistent occipito-posterior cases, as otherwise the child's arms do not face the mother at birth.—I am, etc.,

Glasgow, E.1. JAMES COOK.

Ambulance Transport in Rural Areas

SIR,—I ask for better consideration of the use of ambulance transport for patients who live in rural areas. Will hospital staff whose patients have to travel long distances consider the effect of such travelling by public transport? Will they also endeavour to find out the distance of the patient's home from the nearest bus stop or railway station? Lastly, will they remember that the use of private cars is seriously restricted by the petrol shortage, and that in rural areas it may be impossible to obtain a taxi at certain times?

Our rural area is dependent on four hospital centres—Nuneaton, Coventry, Birmingham, and Warwick. In the case of Nuneaton, the public transport service is direct. There is no direct service to Birmingham or Warwick. Patients who go to either of these places have to change buses or trains, and in addition have to wait upwards of an hour or more, especially on the return journey. The double journey never takes less than six hours, exclusive of the time taken by the patient to get from his home to the bus or railway station. I will quote instances of serious illness or hardship resulting from the refusal or neglect to provide an ambulance.

I now have a patient seriously ill in hospital with pulmonary tuberculosis. *X* ray shows that both lungs are extensively infected and there are tubercle bacilli in the sputum. Before admission to hospital this patient had to travel at least fifty miles return to have a pneumoperitoneum done every ten days. This journey had to be undertaken by public transport (as my request for the use of a car or ambulance was refused). The journey had to be done in two stages, with a wait of an hour between changes. On the day following the last journey for a pneumoperitoneum the patient had a severe pulmonary haemorrhage. He was confined to bed, and after a few days transferred to hospital.

The second instance is a multipara, a woman in poor circumstances who was sent into hospital by me with pneumonia, with a four months' pregnancy. She aborted while she was in hospital. Eight days after admission this patient was sent home. She had to walk

about a mile to the nearest bus stop and then wait for a bus on a cold day. Three days later I was called in to see her. She then had a recurrence of the pneumonia.

Lastly, I will refer to a child of 4 who was knocked down by a car. She received a fracture of the skull with hernia cerebri. An operation was performed which was quite successful. On the eighth day she was discharged from hospital. No ambulance was provided. By public transport the journey home would have taken three hours, and it was necessary to change half-way. Fortunately the parents (after some difficulty) were able to get a taxi home at a cost of £2 5s.

It is only fair to add that we have an ambulance service which works very efficiently in the great majority of cases. The veto on the use of an ambulance in the above-mentioned cases did not come from the county medical officer of health. I hope this letter drives home the lesson that we can carry economy too far.—I am, etc.,

Atherstone, Warwickshire MARK BRADFORD.

Therapeutic Controls

SIR,—Suggestion is the Cinderella of Medicine. Satirists from Molière to Shaw have never tired of lambasting "The Faculty" for its use, but the many fortunes made out of patent medicines point to a misdirection of the attacks, which should have been aimed at the intransigencies of human nature.

Freud, in his *Introductory Lecures on Psycho-Analysis*, warmly commends Bernheim for his recognition that suggestion is the operative factor in treatment by hypnosis, at which incidently Freud began his own clinical work, but he notes that Bernheim could not say how it worked nor what was its origin. Freud was put against it by the chicanery which surrounded it, though in his last lecture he admits that through the transference (or the affection for the doctor) after the analysis has been completed, when the patient really knows himself, the dynamic of the treatment is once again the familiar suggestion. It is not so difficult to comprehend this if one looks upon suggestion as a method of actuating the natural forces towards recovery—the *vis medicatrix naturae*—which are present in everyone.

The same deception that worried Freud worries the modern investigator, and to avoid the effects of suggestion he institutes various controls. It is rather like chasing a will-o'-the-wisp, and ironically enough he employs deception, as it were in reverse, to avoid deception. To one group the drug to be tested is given and to another (corrected for age, etc.) an inert or dummy substance is used, so that in theory any positive results in the first group should not be due to suggestion.

But at once difficulties begin as fallacies become clear. Can the effects be due to the many nuances in human relationships? *Quis custodiet ipsos custodes?* The control must be controlled, and the giver of the tested substance must not know whether the true or dummy substance is used. What an admission! And now this guarding of the guard in the light of parapsychology, with its reports of extrasensorial perception, becomes uncertain. The only control worth anything is for everybody to stick to the verities. But that may be asking too much.—I am, etc.,

London, S.W.1. E. GALLOP.

POINTS FROM LETTERS

Procaine Penicillin in Children

Dr. J. C. JONES (London, S.E.25) writes: In connexion with the article by Dr. J. L. Emery, Mr. S. M. Stewart, and Dr. D. G. H. Stone (May 14, p. 845) on the use of procaine penicillin in children, may I indicate that we G.P.s do not confine ourselves to the modest doses indicated? We know that the blood concentration has to be maintained in the rush and hazard of general practice, when one can never be sure of just exactly when one can give the dose that is to follow—not to several hours or even a day. We therefore dose adequately. My own practice is to give: under 18 months, up to 300,000 units; between 18 months and 5 years, up to 600,000 units; over 5 years, up to 900,000 units. Dangers appear to be negligible, and results are extremely satisfying. It is most important to prevent the injection from running out after administration. It is not sufficient to stick a piece of strapping over the site of injection. One needs to cut the strapping in a cruciform shape and place the centre of the cross over a pledget of wool moistened with tinct. benz. co. which covers the site of injection.

Obituary

S. LYLE CUMMINS, C.B., C.M.G., LL.D., M.D.

Professor Lyle Cummins, who was for many years David Davies Professor of Tuberculosis in the Welsh National School of Medicine, died at Oxford on May 26 at the age of 75.

Stevenson Lyle Cummins, son of the late Dr. W. J. Cummins, was educated at Faughnan's College, Roscarbery, and at Queen's College, Cork, where he graduated in 1896. He joined the R.A.M.C. a year later, and was mentioned in dispatches for his work as a regimental medical officer with the Nile Expedition of 1898. He was at the battle of Omdurman, and subsequently served in the Sudan and in Egypt, where he first began to take an interest in tuberculosis. He was pathologist at the Netley Hospital from 1908 until his appointment in 1910 as officer in charge of the Typhoid Vaccine Department of the R.A.M.C. College. In 1913 he was made assistant pathologist at the College, and during the 1914–18 war he contrived to continue his work on vaccines while acting as adviser in pathology to the British Armies in France and Flanders. Lyle Cummins went to France with the first Expeditionary Force, and was informally attached to Sir John French, but took a large part in organizing and directing the medical services, particularly those of the lines of communication. He remained at G.H.Q. throughout the retreat from Mons, and afterwards at Abbeville. After the battle of the Somme he was for a time a divisional A.D.M.S. in France and later in Italy. As a lieutenant-colonel he was mentioned six times in dispatches and was made a C.M.G. in 1915. He was promoted to the rank of colonel in 1918, and was awarded a C.B. in 1919.

After the war Lyle Cummins succeeded Sir William Leishman as professor of pathology at Millbank, and he resigned this office in 1921 to take up the appointment of professor of tuberculosis at the Welsh National School of Medicine. There he did much to develop the tuberculosis department of the School, and he retired with the title of emeritus professor in 1938. During his tenure of the chair Lyle Cummins was keenly interested in all new methods of treatment, particularly in "sanocrysin" during the early years. Later his main research interest was in the silico-tuberculosis of South Wales coal-miners. He believed that coal dust had an influence, favourable to the patient, on the course of pulmonary tuberculosis, and carried out considerable experimental work to support his view. He was extensively occupied with postgraduate teaching, and initiated and developed the tuberculous diseases diploma of the University of Wales and the course leading to it. His classes were filled by doctors from all parts of the Commonwealth and Empire, particularly from India, and these students returned to their own countries to take prominent parts in the campaign against tuberculosis.

Lyle Cummins acted as adviser and consultant to the research committee investigating tuberculosis among South African natives, particularly those engaged in mining on the Witwatersrand. During the investigation, which was controlled by the South African Institute for Medical Research and lasted three years from 1926, Cummins visited South Africa on three occasions, and was responsible for important parts of the report published in 1932. He won the Parker Memorial Prize for his essay on enteric fever in 1913. Subsequently he contributed articles to medical journals and textbooks on such subjects as kala-azar, tetanus, and influenza. For many years, however, his main interest had been in tuberculosis, and his book *Primitive Tuberculosis* appeared in 1939, a year after his retirement. Only a few weeks ago his *Tuberculosis in History* was published. Probably few people were as well fitted as Professor Lyle Cummins to discuss this question.

Apart from his long period of service as the David Davies Professor of Tuberculosis for seventeen years, he had also been principal medical officer to the Welsh National Memorial Association until 1927. By then the duties of this post had become too onerous to be undertaken part-time. Lyle Cummins therefore took the title of director of research and acted as a

effective link between the Memorial Association and the medical school. He was vice-president of the section of tuberculosis at the annual meeting of the British Medical Association in Glasgow in 1922, and he presided over this section when it met at Winnipeg in 1930. He played an active part over many years in the work of the Tuberculosis Association, the Joint Tuberculosis Council, and the National Association for the Prevention of Tuberculosis. He was a member of the council of the N.A.P.T., chairman of its Empire Committee, and in 1937 he conducted for the N.A.P.T. a survey of tuberculosis in Burma. During the recent war he resumed work in Cardiff for a year or so, and he was always a keen member of the Home Guard.

He married in 1906 Eleanor Fenton, daughter of the late Robert Hall, and they had a son and three daughters.

W. H. T. writes: It is perhaps impossible for any one person to form a complete appreciation of Lyle Cummins. His talents and interests were so diverse, and his facility of impromptu thought and expression so great, that whatever he was doing or discussing seemed of first importance. His unfailing courtesy and tolerance, formal or informal, might suggest to the unwary some artificiality, but he was genuinely absorbed in everything he did, even when dealing with essentially uncongenial persons or affairs. He was no man of single purpose, but his many purposes were all earnest and active—whether he was dealing with day-to-day medical science, presiding at a medical meeting with irreproachable dignity, writing plays for children in blank verse and having them performed in London, relating to his own children night after night sustained serial stories all completely impromptu, or fishing with the skill of long experience combined with a schoolboy zest and optimism which was maintained to the last.

Cummins came of a gifted family, Irish by long adoption, and inherited their abilities and the acquired characteristics of his native land—including processes of logic that were often devious or perverse, but usually centred about ideas of truth and significance. Perhaps the strongest factor in his life was sentiment, which coloured all his relations and often interfered with his scientific judgment, particularly of persons. If he had a personal affection for an early teacher, a contemporary colleague, or a subordinate or pupil, that person's attainments were automatically raised above their true level. His high sense of duty and obligation to others was strongly enhanced by sentiment, and it was sufficient to suggest that an unwelcome task was not obligatory to make certain that he would take it on.

He was perhaps too diverse for radical scientific research, but he grasped, developed, and propounded ideas about tuberculosis which bore much fruit with others, and he inspired pupils who to-day, in many parts of the world, are foremost in the fight against the disease. He might have made a larger place for himself in literature than in medicine had he devoted himself entirely to it. His imagination was too wide for scientific limits, and his last work, *Tuberculosis in History*, written during retirement and published just before his death, showed his technical facility in writing. It is much the finest and most finished of his writings, perhaps his best accomplishment of any kind, and shows what he could do when free from distracting duties. Few persons can have inspired so much affection in so many people, for he was above all lovable and completely devoid of malice. He made in all no mean contribution to medical knowledge and education, and his name was known the world over, but by his friends he will be remembered more for his personal character than for scientific attainments.

Dr. Philip Ellman writes: I had the privilege of knowing Professor Lyle Cummins for some twenty years, and well recollect the fear and trepidation with which I read one of my first papers at a conference, with him in the chair, of the Royal Institute of Public Health held in Frankfurt in 1931. Those who knew his kindliness and understanding will realize how he was able to put me at my ease and will appreciate those qualities which made him a friend, guide, and counsellor in all that pertains to tuberculosis, the pneumoconioses, and allied subjects. I owe him a special debt of gratitude for the foreword he wrote to my book and the guidance he gave me in its compilation. It is to Professor Cummins that the subject of pulmonary tuberculosis owes in no small measure its present position in medicine. He will be remembered for years to come for his comprehensive classification of the disease, which has received international recognition. His contributions to the epidemiology and pathology of tuberculosis and the zeal with which he sponsored research and medical education are well known to all workers in this domain.

His appointment as first David Davies Professor of Tuberculosis in the Welsh National School of Medicine was a well-merited recognition of his services and enabled him to expand his work and our knowledge. Professor Cummins will be remembered also for his sociological and historical studies. In the latter connexion he was vigorous in giving full recognition to the too little known work of Villemin and his theory of the infectivity of the disease.

On a more personal note, I recall also the delightful hospitality I always received from him and the charm with which he greeted his friends, young and old, at all times. It has always seemed to me a happy coincidence that his youngest daughter should have been one of my students and subsequently my house-physician, and I know how proud he was that she was continuing her father's work by devoting herself to tuberculosis, the subject he made indeed his own.

H. A. COOKSON, C.B.E., F.R.C.P.Ed., F.R.C.S.Ed.

Dr. Henry Cookson died in Toronto on March 15. He retired just over a year ago and had been in Canada visiting his two sons.

Henry Anstey Cookson was educated at Clifton, at Emmanuel College, Cambridge, and at King's College, London, and Edinburgh University. He graduated M.B., Ch.B. in 1910, obtained the F.R.C.S.Ed. in 1913, and the D.P.H. in 1915. During the 1914–18 war he was in France with the R.A.M.C., and was in charge of laboratories.

In 1923 Cookson was appointed clinical pathologist to the Sunderland Royal Infirmary. He came to two small rooms, a wooden bench, and some odds and ends of impedimenta. He departed in 1948, leaving a laboratory the equal of that in any provincial hospital in Britain. Over the years he became pathologist to the Sunderland General Hospital, the South Shields Corporation, and the Darlington Memorial Hospital. His opinion was often sought by his colleagues, and specimens reached his laboratory from all parts of the county of Durham. He developed a considerable medico-legal practice, and his services were often required by the director of public prosecutions and by many coroners. Cookson was an expert witness with a keen appreciation of the most important point at issue. He was largely concerned in matters of compensation and was the pathologist employed by the Durham Miners Association. In this connexion his influence was considerable, and his opinion was accepted without question. He became M.R.C.P.Ed. in 1935 and was elected to the fellowship in 1938. He was awarded the C.B.E. for his services to the people of Durham in 1947, an honour that was welcomed by his friends. Cookson was an examiner for the Edinburgh College of Surgeons, and he was the author of several papers on bacteriology and pathology. He retired in January, 1948, and, with Mrs. Cookson, sailed to Canada for a prolonged holiday.

Henry Cookson was essentially an individualist and conducted his affairs in a way entirely his own. With a rich mixture of suavity and bravura, he accomplished much. He was an endless conversationalist, and time, his own and other people's, was of little account. He was jovial, humorous, a teller of tales and anecdotes, and a considerable diplomatist. He would go to endless trouble to carry out any investigation which might check or confirm a clinical diagnosis, and with his wide range of experience and his comprehensive knowledge of the recent literature he was of immense assistance to his colleagues. In general affairs he was a little apt to change his mind, but he was very able, shrewd, and most kind to the younger members of the profession.

As a youth he had been a considerable athlete. Latterly he was an ardent fisherman, entomologist, and interested in archaeology. Cookson stood high in the opinion of all. He was a loyal and faithful colleague, a kind and ever-helpful friend. His colleagues and friends offer their sympathy to Mrs. Cookson and his sons.—P. A.

A. M. D. writes: Although Dr. Cookson's main life work was centred in the county of Durham he had many friends north of the Tweed. His association with Edinburgh began in his student days at the University and later was revived when he came as an examiner in pathology and also in forensic medicine to the Royal Colleges, in each of which he was a Fellow. Those who knew him in the early period remember him best as an all-round athlete; he got a triple blue—for hockey, cricket, and athletics—and he played hockey for Scotland. This open-air interest remained with him throughout his life, when these strenuous activities were replaced by an intense enthusiasm for angling and for the study of archaeological remains. He had an acute and inquiring mind, and in the midst of heavy routine duties, of hospital and forensic work, he found time to make many interesting observations, only a few of which he published.

In later years increasing work and responsibilities weighed heavily upon Cookson, and he longed for quiet and leisure to pursue the many problems he had encountered. His retirement in 1948 was prompted by this desire, which he had hoped to fulfil after an extended holiday in Canada, seeing both his sons. To one of his activity retirement was merely an occasion for further work, for which he was beginning to chafe when he was suddenly struck down. Cookson was a blend of great professional acumen and refreshing youthfulness. Even in the midst of heavy professional work he would interpolate some quiet joke. He was a delightful and amusing companion, full of quaint stories and pawky sayings, and he loved to act the part of his characters, to the great entertainment of his listeners. He will be greatly missed by those who knew him and who were privileged to be his friends.

Medico-Legal

DISINFECTANT IN MILK

Three Unusual Deaths

Three premature babies who died in Stobhill Hospital, Glasgow, on March 27 were accidentally fed from a bottle containing a mixture of breast milk and "dettol." A formal verdict in accordance with the medical evidence was returned at the inquiry held before Sheriff Wellwood Johnston on May 12.

A pupil midwife described how on the evening of March 26, after removing a bedpan from one ward, she placed on a corner table a bowl of "dettol" solution, which she intended to act as a deodorant. This was the first occasion on which she had done such a thing while at Stobhill Hospital. At the same time she removed a similar bowl which contained about 1 dr. (3.5 ml.) of expressed breast milk. This she took to the formula room on another floor.

Another pupil midwife collected two bowls containing breast milk from two other wards, the milk being taken from the mothers of premature babies. She collected at the same time from the corner table a similar bowl which was half full of a white solution she assumed to be breast milk. She was wearing a mask and was suffering from a cold.

A third pupil midwife, on the same evening at about 8 p.m., went into the formula room and saw that each of the bowls contained what she believed to be milk. In one of the bowls there was about half a pint (284 ml.) of fluid, but this was not unusual. She filled two bottles from that bowl and also poured some of the contents into two other bottles which had not sufficient breast milk. All four bottles were then placed in a saucepan for sterilizing.

A staff midwife who had previously washed the four bottles had not used any "dettol"; she also wore a mask. The nurse in charge of the nursery ward for premature babies made up the ten-o'clock feeds and the sister then tube-fed four babies. The nurse went on to feed another child who refused to suck. The sister meanwhile was having difficulty with another baby. She noticed that one of the tube-fed premature babies was distressed and coughing. The contents of one of the bottles was then found to have an odour of "dettol." The obstetrical registrar was notified.

Medical Evidence

Dr. John Henderson found that the fluid in the bottles looked like expressed breast milk but tasted and smelt of "dettol." He immediately treated the four babies by gastric lavage, nikethamide, and the administration of oxygen. Three of the babies died in the course of the morning of March 27. The first fatal case was a month-old baby, one of twins, delivered prematurely at the end of the seventh month. Another premature baby girl was aged only nine days. The third male baby was also a small premature child and only four days old.

He agreed that "dettol" was widely used as a disinfectant and that in some hospitals it might be used as a deodorant. Very similar bowls of "dettol" were used in the labour room. Steps had since been taken to prevent a repetition of this accident. A colouring agent had been added to all the supplies of "dettol" in the hospital dispensary. He thought that the mixture the babies were given would be roughly half breast milk and half a "dettol" solution of unknown strength.

Dr. Findlay James Ford said that it would be difficult to distinguish between a "dettol" solution and expressed milk particularly when masks were worn. "Dettol" was used so constantly in the hospital that everybody became accustomed to it: "After you had been in the hospital for about ten minutes I don't think you would even notice the smell."

Professor Andrew Allison, who had performed the necropsies, presented his report. The first baby weighed 3 lb. 15 oz. (1.78 kg.) and had weighed 3 lb. (1.36 kg.) at birth. Deep lividity of the back and cyanosis of the lips were noted. There was partial atelectasis of both lungs. When the abdomen was opened a smell of "dettol" was observed; the stomach contained a small quantity of greenish grumous fluid. The gastric mucosa showed several small erosions. The appearances were those due to an irritant poison and were consistent with the ingestion of "dettol."

The second child weighed 4 lb. 5 oz. (1.95 kg.) and had weighed 4 lb. 8 oz. (2.04 kg.) at birth. There were the same external appearances. Both lungs showed patchy atelectasis and again there was the odour of "dettol" when the abdominal cavity was opened. At the cardiac end of the stomach the lining membrane showed several small areas of congestion.

The male infant weighed 5 lb. 2½ oz. (2.34 kg.) at birth. The greater part of the middle lobe and about three-quarters of the lower lobe of the right lung were atelectatic. The left lung showed patches of atelectasis. There was considerable redness at the cardiac end of the stomach.

He agreed that all three were small premature infants. The phrase "irritant substance" might perhaps have been used instead of "irritant poison" in each report. Whisky would have been just as fatal to these children. He was not using the word "poison" within the meaning of the Poisons Act but as something that started a train of circumstances that led to death. Any irritant would readily have been fatal with such children. It was well known that "dettol" was a relatively non-toxic substance, but even so it was not a thing to be administered to newly born or premature children.

Finally Mr. Archibald Robert Jamieson stated that he had analysed a sample received from the hospital. This proved to contain 5% of "dettol," 5 to 7% milk, and the remainder water.

Medical Notes in Parliament

INDUSTRIAL HEALTH SERVICES

On June 1 Mr. ATTLEE made a statement on the relationship between the National Health Service and the various health services provided in industry which made a call on medical man-power. He said that, to secure that the country's limited medical resources were used to the best advantage and with regard to economy, it was essential that these services should be organized in such a way as to ensure there was no duplication or misdirection of effort. He had therefore appointed, to advise the Government on this matter, a committee whose members were drawn from the industrial field and various branches of the medical profession. Judge E. T. Dale had agreed to act as its chairman. He suggested to all branches of industry that development of industrial health services should

as far as possible be postponed until the committee's recommendations were available. He hoped that the committee would not take very long to survey the field.

Colonel STODDART-SCOTT asked whether Mr. Attlee would extend the inquiry to include the medical service of the Ministry of Pensions and of the Ministry of Education.

Mr. ATTLEE said that would delay a decision which was needed. He agreed that the industrial health services should be preserved. What was needed was to prevent overlapping.

The members of the committee are: Judge E. T. Dale (chairman); Mr. John T. Byrne, Electrical Trades Union; Dr. T. A. Lloyd Davies, Chief Medical Officer, Boots Pure Drug Co.; Mr. R. R. Hyde, Director, Industrial Welfare Society; Dr. Walter Jope; Mr. K. I. Julian, Chairman, South-east Metropolitan Hospital Board; Dame Anne Loughlin, former Chairman, T.U.C.; Mr. J. H. Pheazey, Standard Telephones, Ltd.; Dr. L. Roberts, Medical Officer of Health, Sheffield; Dr. A. T. Rogers; and Sir Geoffrey Vickers, National Coal Board. The joint secretaries of the committee are Mr. F. W. Beek, Ministry of Health, and Mr. C. H. Sisson, Ministry of Labour and National Service.

Policy on Sight Testing

On June 2 Mr. BEVAN stated that sight testing and the supply of spectacles should, as resources allowed, be carried out in hospitals and clinics provided as part of the hospital and specialist service in charge of ophthalmologists, with opticians playing in them their proper professional part. Government policy was unchanged in this regard.

Port Health Regulations

Answering Mr. BOYD CARPENTER on May 26, Mr. BEVAN said he had no power to prevent persons from landing because of infectious disease. The Port Health Regulations, 1933 and 1945, prescribed separately the conditions that, in general conformity with the relevant International Sanitary Convention, could be imposed against plague, cholera, yellow fever, typhus fever, and smallpox. Normally the greatest risk to this country was presented by smallpox. If a ship arrived that had, or had recently had, a case of smallpox on board, any person suffering from the disease was disembarked and isolated. Any person exposed to infection on board, unless in the opinion of the Port Medical Officer that person was sufficiently protected by recent vaccination or by a previous attack of smallpox, could be (*a*) offered vaccination and placed under surveillance for 14 days; or (*b*) placed under surveillance for 14 days without vaccination; or (*c*) offered vaccination and isolated until the result of the vaccination is known, and thereafter kept under surveillance for 14 days from the arrival of the ship; or (*d*) isolated for 14 days after the arrival of the ship.

Requirements (*c*) and (*d*) could not be imposed unless the Port Medical Officer considered that there was exceptionally serious risk of the introduction of smallpox into the country. Mr. Bevan explained that "surveillance" was defined in the International Sanitary Convention to mean that the persons were not isolated but that the health authorities of the places to which they were going were notified of their coming. Port Health Regulations imposed on such persons obligations designed to secure that they could be effectively supervised. He added that he was considering whether any further powers were needed to check the introduction of infectious diseases from overseas.

Chronic Sick in Mental Hospitals

On May 26 Mr. YATES spoke of the inadequacy of existing facilities for the care of the chronic and aged sick in the city of Birmingham, and asked what steps Mr. Bevan proposed to take to improve these facilities.

Mr. BEVAN said, in reply, that the Regional Board had two groups of experts investigating the problem, and would take further action in the light of their reports. Meanwhile, unused beds were being brought into use wherever possible and arrangements made with the local health authority for home nursing.

Mr. YATES said that in the past year more than 90 aged persons, chronically sick, had been admitted to mental hospitals, of whom about 17 had died within a month of admission.

Mr. BEVAN said it should not be assumed that they died because they went to hospital. They were not in the mental hospital as such, but occupied the same physical accommodation as other people. During the war a great deal of the E.M.S. had been housed in separate parts of mental hospitals. He could not accept the statement that old people were certified as mental cases in order to be taken into hospital. That was a gross and offensive charge against the doctors concerned. As for the statement that a proportion of the patients had died from heart failure, people had died from that cause for millions of years. Members should be ashamed of saying that the doctors and magistrates concerned with certification were certifying old people who were not "mental."

Asked later by Mr. YATES to what extent the Birmingham mental hospitals were understaffed, Mr. BEVAN said that at Winson Green Hospital the deficiency of female nursing staff was 28% and of male 27%. At Rubery Hill the deficiency was female staff 50%, male staff *nil*. Persistent efforts were being made to recruit staff through the Ministry of Labour and by local recruiting campaigns and advertisement.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

In Congregation on May 28 the following medical degrees were conferred:

M.D.—E. B. Davies, O. B. Appleyard, F. S. Carter.
M.B., B.CHIR.—S. G. A. Forsyth (by proxy).

UNIVERSITY OF LONDON

The following candidates have been approved at the examination indicated:

THIRD M.B., B.S.—[12]B. N. Bailey, [13]Joyce M. Daws, [14]I. E. Evans, [13]J. E. Fay-[13&]K. A. Manley, [13]S. Myers, [16]Olive M. Riddle, [15]H. H. Ronn, [16]G. Westbury, J. D. Arneaud, Patricia Arnold, R. C. B. Arthur, J. McP. Ashley, F. R. St. C. Assinder, C. L. Baker, J. H. Ballantyne, J. P. Barham, Rosemary E. Barker, June E. Bartlett, R. W. A. C. Barton, K. L. Batten, D. F. Bedford, Janet B. Bell, B. S. Bendeth, N. G. L. Bennett, Margaret V. Bickerton, S. H. Birchett, J. A. L. Bonnell, E. F. Bowers, T. K. Brandreth, T. B. Brewin, J. G. Brice, J. A. C. Brown, R. MacL. Brown, Ena K. Bruck, J. M. Brudenell, R. Burtles, P. Buri, Maria J. Cahn, June D. Cain, E. J. M. Campbell, K. J. M. Carruthers, R. H. Carruthers, L. S. Carstairs, J. K. Carter, M. J. Catton, D. Charles, B. G. B. Christie, J. Colquhoun, M. B. Comerford, Annette M. L. Constantin, P. B. Cook, G. A. Coombs, W. E. Cooper, R. E. Cotton, K. J. Covell, D. N. Cow, W. H. Craike, I. B. Crawford, June D. Cross, Phyllis A. M. Crozier, Patricia Q. Currie, J. A. Daff, A. J. Davies, Margaret K. Douglas, Romola D. Dunsmore, R. N. Ebbing, D. A. Ellerton, I. L. Evans, I. B. T. Evans, J. H. Evans, H. B. F. Fairley, S. Fernando, Doreen C. Finch, B. L. Finer, Margaret M. F. FitzPatrick, Barbara J. Fleming, P. Flintan, M. O. Forster, A. W. H. Foxell, Yvette A. P. Franklin, P. N. Gai, P. S. Gardner, L. K. Garstin, E. Gellatly, D. D. Gellman, H. J. Giwelb, R. W. Glenn, J. E. S. Gould, S. H. Gould, N. D. Gower, A. A. Graham, J. M. Graham, P. J. Grant, J. T. Groves, G. W. Hadfield, M. H. Handoll, R. Handy, M. J. Harman, Josephine Harper, J. W. S. Harris, A. Herxheimer, N. Ll. Higgins, J. F. Hindle, J. M. Hinton, J. J. B. Hobbs, A. C. S. Hobson, J. P. S. Hodges, H. Hollis, Margaret A. Holroyde, Margaret C. Horder, P. Howard, A. J. C. Hyde, Margaret O. Jago, D. T. R. James, O. James, J. L. Jarvis, D. G. Jenkins, R. L. Jillett, W. Johnson, A. Jones, J. A. B. Jones, J. F. Jones, E. R. Jordan, D. W. Kennard, Sylvia Kershaw, L. C. Kreeger, Ursula M. Kynoch, B. S. Laing, J. M. Lancaster, M. Lauchlan, L. F. Levy, A. J. Lewis, M. J. Linnett, C. J. Lucas, Elizabeth G. S. McDowall, A. E. McLauchlan, A. K. Mant, A. R. C. Margetts, Joan Marshall, M. D. Mehta, G. H. C. Melotte, A. H. Mendoza, G. G. Meynell, L. Michaels, D. D. Miller, Margaret R. Miller, O. T. Ll. Morgan, D. D. B. Morris, V. C. Morris, M. R. Murley, C. H. Neaves, G. F. Newbold, R. G. Nicholson, K. C. Nyman, P. O. Oliver, K. I. Padget, W. K. Pallister, M. C. Peterside, A. H. Phillips, N. H. Porter, Betty E. Powe, F. J. Powell, D. L. Pryer, Colette L. Raulin, P. A. Reed, H. H. Richards, A. E. Richardson, P. Roberts, Margaret Rogers, F. C. Rose, I. P. Ross, S. S. Rowell, Marian W. Ruscoe, J. L. Russell, A. J. Salmon, K. M. Saunders, P. D. Saville, Muriel J. Scudamore, G. T. Smedley, D. W. Smith, R. W. Smithells, G. J. Sophian, M. H. Southall, Jean P. Spalding, G. C. Squires, E. J. Stafford, H. B. Stafford-Kemp, Lorna C. Stanfield, H. Sterndale, J. A. B. Stewart, A. G. I. Stockley, D. Stubington, M. H. Symes, Pamela C. Tatham, A. W. Taylor, B. Taylor, Brenda A. Taylor, G. B. Taylor, J. B. Taylor, E. T. Thomas, K. D. W. Thomas, R. G. Thomas, J. M. Titmas, D. O. Topp, Rita D. C. Tozer, J. C. L. Wade, C. S. Ward, Catherine A. Warrick, J. A. G. Watson, J. R. Watson, M. A. Weller, J. H. McN. White, W. Whittingham, D. R. C. Willcox, J. D. Williams, J. L. Williams, Molly T. Williams, F. Wilson, Josephine P. Winter, W. J. Wright, F. R. H. Wrigley.

[1] With honours. [2] Distinguished in hygiene and forensic medicine. [3] Distinguished in medicine. [4] Distinguished in applied pharmacology and therapeutics. [5] Distinguished in surgery. [6] Distinguished in obstetrics and gynaecology.

The Services

The Emperor of Ethiopia has conferred the Haile Selassie I Military Medal with one Palm upon Lieutenant-Colonel (Temporary) C. B. Drew, M.B.E., R.A.M.C., in recognition of distinguished services in the cause of the Allies.

The Socialist Medical Association has proposed a syllabus for a two-year basic training in nursing. The emphasis is on practical training rather than on teaching the nurse theoretical knowledge which she may never need to use. Dr. Hugh Gainsborough points out in a foreword that "a nurse does not need to memorize the names of pancreatic enzymes in order to care for a patient suffering from carcinoma of the pancreas." He also advocates postgraduate education for ward sisters.

No. 20

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended May 21.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1949 (a)	(b)	(c)	(d)	(e)	1948 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	34	6	22	—	1	48	5	16	1	—
Deaths		—	—				1	—		
Diphtheria	92	10	27	3	5	168	24	45	10	1
Deaths	—	—	—	—	—	2	—	—	—	—
Dysentery	55	5	19	1	1	118	32	40	—	1
Deaths				—	—				—	—
Encephalitis lethargica, acute	—	—	2	—	—	1	—	—	—	—
Deaths							—			
Erysipelas			27	3	5			24	10	4
Deaths			—				—			
Infective enteritis or diarrhoea under 2 years				41					19	
Deaths	12	1	3	3	—	39	2	17	4	2
Measles*	8,478	1105	480	194	183	11,677	994	251	149	77
Deaths†			—	—	—			2	1	—
Ophthalmia neonatorum	47	1	3	1	—	57	5	16	—	—
Deaths										
Paratyphoid fever	8	—	1(B)	—	—	8	—	2(B)	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	441	24	7	6	10	628	34	5	2	5
Deaths (from influenza)‡	19	2	2	2	—	5	—	1	—	1
Pneumonia, primary			197	34				201	46	
Deaths	164	29		5	9	144	19		2	12
Polio-encephalitis, acute	1	—				2	—			
Deaths										
Poliomyelitis, acute	11	1	3	1	1	20	2	2	3	—
Deaths§	—	—				—	—			
Puerperal fever		—	9				—	8		—
Deaths										
Puerperal pyrexia‖	86	10	7	3	1	105	8	20	—	—
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,108	70	137	56	31	1,354	105	256	37	26
Deaths†			—	—	—			—	—	—
Smallpox	3	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	4	1	—	2	—	6	1	—	1	1
Deaths	—	—	—	—	—	1	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	2,824	155	201	159	71	2,680	228	44	101	14
Deaths	12	1	—	2	—	7	—	1	1	—
Deaths (0–1 year)	264	36	28	18	6	250	35	67	21	12
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	4,491	686	533	185	129	4,087	688	568	165	102
Annual death rate (per 1,000 persons living)			10·7	11·5				11·5	10·3	
Live births	8,295	1355	1058	430	251	7,958	1318	1088	465	259
Annual rate per 1,000 persons living			21·2	26·6				22·0	29·1	
Stillbirths	191	24	25			196	24	27		
Rate per 1,000 total births (including stillborn)			23					4		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales, Eire, and Northern Ireland.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* there was an increase in the notifications of scarlet fever 115, measles 115, and acute pneumonia 35. There was a decrease in the incidence of whooping-cough 82 and dysentery 22.

A small rise in the incidence of scarlet fever occurred in most areas, and there were no large changes in local trends. The increased incidence of measles was mainly contributed by the south midland counties; the largest rises were Middlesex 101 and Nottinghamshire 80, and the largest decrease was in Yorkshire West Riding 51.

There were decreases in the notifications of whooping-cough in Warwickshire 48 and Yorkshire West Riding 43.

There was a decrease of 6 in the notifications of diphtheria in London and an increase of 5 in Lancashire and in Durham.

Of the 55 cases of dysentery 23 were notified in Lancashire (Oldham C.B. 15 and Liverpool C.B. 6). Three cases of smallpox were notified from Cornwall, Liskeard R.D.

In *Scotland* there was an increase in the notifications of measles 36 and of acute primary pneumonia 32. There were decreases in the notifications of scarlet fever 40 and dysentery 16. In Glasgow a rise of 21 in the notifications of acute primary pneumonia was recorded, and in this city 14 of the 19 cases of dysentery were notified.

In *Eire* notifications of whooping-cough increased by 30, while a decline was reported in the incidence of primary pneumonia 12 and measles 19.

In *Northern Ireland* there were decreases in the notifications of measles 19 and whooping-cough 11.

Week Ending May 28

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,233, whooping-cough 2,611, diphtheria 100, measles 9,583, acute pneumonia 485, cerebrospinal fever 39, acute poliomyelitis 19, dysentery 85, paratyphoid 8, and typhoid 4.

Medical News

Locum Register for Tuberculosis Work

The National Association for the Prevention of Tuberculosis has set up a Locum Register where names will be kept of doctors looking for temporary positions in clinics and sanatoria, together with a brief note of their medical qualifications. Those who want locum work of this kind are asked to write to the N.A.P.T. Locum Register, Tavistock House North, London, W.C.1, giving the necessary details and, if possible, a telephone number.

Waiting-list for Mental Defectives

The North-East Metropolitan Regional Hospital Board reports that there is a serious shortage of hospital accommodation for mentally defective patients. In that region there is a waiting-list of over 400; at the present rate of admission to the existing accommodation those at the bottom of the list are unlikely to be admitted in less than 8 to 10 years. The mental health committee of the board has recommended the board to obtain permission from the Minister of Health to start erecting temporary accommodation immediately for at least 200 patients. There is also a long-term project for building more permanent accommodation.

Special Diets for Invalids

Doctors who have not received a copy of the Ministry of Food's memorandum Med. 2 (Revised 1948), which describes the arrangements for granting extra rations and priority allowances of food to invalids and people needing special diets, may obtain it from the local food office.

Pharmaceutical Society

Mr. H. Clement Shaw, of T. C. Cornwell Ltd., has been re-elected president of the Pharmaceutical Society of Great Britain for twelve months. Mr. J. F. McNeal and Mr. W. Spencer Howells have been re-elected vice-president and treasurer respectively.

Croydon Executive Council Chairman

Dr. S. A. Forbes has been appointed chairman of the Croydon Executive Council, and has therefore resigned his chairmanship of the Croydon Local Medical Committee. The new chairman of the committee is Dr. R. N. Deane, and Dr. H. H. A. Elder is vice-chairman.

Public Health Salaries

The salary offered for the post of assistant medical officer advertised by Merthyr Tydfil in this issue of the *Journal* conforms to the scale recommended by the B.M.A. It is the first to appear since the ban was imposed on advertisements not in conformity with that scale, and which continues until the local authorities have indicated that they will enter into negotiations on new scales.

Hospital Cots

Referring to the case of a baby that died from a dislocated neck after squeezing his head through the bars of a hospital cot, the Minister of Health has asked hospital boards and committees to take steps to prevent a similar occurrence in their hospitals, such as lashing two-inch twine netting to the bars of cots. Meanwhile new cots should not be purchased unless the maximum space between bars is 3½ ins. and the minimum space 3 ins.

Visited Sweden

Professor Alan Moncrieff, Director of the Institute of Child Health (University of London), has recently visited Sweden at the invitation of the medical faculties to lecture in Stockholm, Uppsala, and Lund.

For Cancer Research

The British Empire Cancer Campaign has granted £1,865 to Oxford University to be used for cancer research in the Dyson Perrins Laboratory.

British Medical Graduates in the U.S.A.

The American Alumni of British Medical Schools, formed in 1940, has recently been incorporated under the laws of the State of New York. Its functions are to serve the interests of graduates of British schools of medicine. Doctors who are graduates of schools within the British Commonwealth of Nations, including the Irish Free State, and who wish to join this organization should communicate with Dr. Theodore Meltzer, secretary, 123 East 37th Street, New York City, 16.

Rest for Nurses

The following "rest-break houses" for nurses and midwives have been opened under the management of the Council for the Provision of Rest-break Houses for Nurses and Midwives (106, St. Clement's House, London, E.C.4): Barton House Hotel, Barton, New Milton, Hants (accommodation for 48); Drygrange Hotel, Melrose, Roxburgh, Scotland (accommodation for 28, to be increased to 55); Peveril House, Buxton, Derbyshire (accommodation for 27). Applications for accommodation should be made direct to the wardens of the houses. These houses are intended to provide a rest for tired nurses and midwives whose health might break down; they are not for convalescents or holiday-makers. Sick leave should be granted with the appropriate pay when a nurse or midwife stays at a rest-break house, but those using the houses will not normally be eligible for sickness benefit under the National Insurance scheme.

R.S.M. Photographic Unit

The photographic unit of the Royal Society of Medicine was founded in December, 1945, with the aid of a generous grant from the Rockefeller Foundation. The short-term policy of the unit was to assist in the rehabilitation of medical libraries which had been damaged owing to the war. It has supplied, with the agreement of the publishers concerned, whole volumes or issues of out-of-print medical periodicals on microfilm. The unit can now serve other organizations, as well as Fellows of the Society, on a basis of non-profit-making payment. It can do photographic work other than microfilming, such as the making of a film strip, lantern slides of all sizes, direct positive prints from *x*-ray negatives whether in the form of slides, prints, or microfilm, enlargements of clinical photographs, and the making of colour transparencies on 35-mm. film. In addition clinical photography of patients and specimens can be undertaken.

Shortage of Doctors in U.S. Forces

The United States armed Forces estimate that by July 31, 1949, they will face a shortage of 1,600 doctors and 1,160 dentists. By December, 1949, the deficiency is expected to be 2,200 doctors and 1,400 dentists. The Secretary of Defence, Mr. James Forrestal, has therefore opened a national campaign to obtain volunteers from among the younger doctors and dentists who were educated at Government expense or who were deferred from military service because of their status as medical or dental students. Of approximately 18,000 doctors who were given Government grants while students, only some 10,000 served with the Forces; several thousand more men were deferred in order to continue their education. Volunteers will be expected to serve for at least twelve months, and will receive $100 per month in addition to prescribed pay and allowances. As far as possible volunteers will be employed in posts for which their abilities suit them.

Ambulance Radio

The first ambulances in the United Kingdom to be fitted with radio for emergency calls and general control are being used in Guernsey. Radio apparatus has been installed in five St. John ambulances on the island, and radio calls to ambulances near the spot enable seriously ill patients to be rushed to hospital or to a doctor in a matter of minutes. Each of the five ambulances is able to keep in touch with the others or with headquarters, and over 4,000 calls have been dealt with in the twelve months that the ambulances have been operating.

National League of Hospital Friends

Since the Health Service started, local Leagues of Hospital Friends or similar voluntary organizations bearing other names have been formed with the purpose of maintaining personal interest in hospitals and their patients. The organizations have now formed the National League of Hospital Friends to provide a centre through which they can exchange information and advice. Individuals as well as local leagues may join the National League. Lord Luke is president, Lady Monckton honorary treasurer, Mr. J. P. Wetenhall chairman, and Mr. R. F. Millard acting honorary secretary. A survey recently made by the British Hospitals Association shows that some 500 hospitals have the interest and support of 175 leagues.

Milk from Hospital Farms

Though the Milk and Dairies Regulations, 1926–43, do not apply to hospital dairy farms, the Minister of Health considers that the hygienic requirements prescribed in them should be complied with where possible. At present the State Veterinary Service will continue to carry out tuberculin testing and clinical examination of herds at hospital farms which up to July 5, 1948, were licensed for the production of tuberculin-tested milk, as well as the clinical examination of herds which were licensed for the production of accredited milk and of any herds not so licensed. Local authorities have been asked to take at least twelve samples of milk a year from each of the herds at hospital dairy farms for examination by the methylene-blue test. Boards of governors and hospital management committees should arrange for at least one sample to be taken every three months for biological examination for organisms of tuberculosis and for examinations for *Brucella abortus*. The services of the Ministry's milk inspectors are available on request.

Central Council for Health Education

At its quarterly meeting on April 28 the Central Council for Health Education approved a plan for holding a conference on the objects and methods of health education on Nov. 8 and 9. Dr. Robert Sutherland will spend September and October in the U.S.A. studying the methods of health education there under the auspices of the Rockefeller Foundation.

London Irish Golf

The winners of the competitions held by the London Irish Medical Golfing Society at Sunningdale on May 26 were: Embryo Cup, Dr. J. T. McCarthy; Nelligan Cup, Dr. W. Houston.

Wills

Dr. George James Irvine Linklater, formerly chief executive school medical officer for Edinburgh, left £1,367. Dr. Samuel Robert Hunter, of Dunmurry, Co. Antrim, left £35,896. Dr. Francis Henry Swindon Curd, who was responsible for much of the early work on paludrine and antrycide, left £709. Dr. Donald Hugh Cameron, of Sheffield, left £5,724. Dr. Norman John Boulton, of Kintbury, Berks, left £17,231.

COMING EVENTS

Birmingham Consultants' Meeting Cancelled

The general meeting of consultants in the Birmingham Region, announced to take place on June 11, has been cancelled.

Conference on Maternity and Child Welfare

The National Association for Maternity and Child Welfare will hold its annual conference at Friends House, Euston Road, London, N.W., on June 22, 23, and 24. The general theme of the conference will be "The Effects of Recent Social Legislation on Mothers and Children," which will be discussed in relation to health, education, and welfare. The Minister of Health will deliver an address at the close of the conference, which will be opened by Dr. Charles Hill. Other speakers will include Dr. E. K. Macdonald, Dr. Nora Wattie, Dr. Barbara Bailey, Mr. G. H. Sylvester, Mr. Douglas Houghton, M.P., and Dr. May Baird. Visitors will be welcome either to the whole conference or to single sessions. Full particulars can be obtained from the secretary of the association, 5, Tavistock Place, London, W.C.1.

Golf Competition

The annual competition for the North Manchester Medical Golf Cup will be held at Manchester Golf Club, Hopwood, near Middleton, on June 29. The cup is awarded to the player returning the best net score over eighteen holes. The entrance fee is 7s. 6d. Inquiries should be addressed to Dr. J. A. Strachan, 566, Broadway, Chadderton, Lancs, on or before June 25.

Addison Lecture

The third Addison Lecture will be delivered in the physiology theatre, Guy's Hospital Medical School, London Bridge, S.E., on Thursday, June 23, at 5 p.m., by Sir Henry Dale, O.M., F.R.S., on "Thomas Addison—Pioneer of Endocrinology." The chair will be taken by Sir Herbert Lightfoot Eason, and applications for tickets should be made to the Dean, Guy's Hospital Medical School, London, S.E.1, by Thursday, June 16.

International Congress of Biochemistry

The 1st International Congress of Biochemistry will be held at Cambridge on Aug. 19–25. Information may be obtained from the Honorary Organizer, Lieut-Col. F. J. Griffin, 56, Victoria Street, London, S.W.1. The Congress is in twelve sections: (1) Animal Nutrition and General Metabolism: Chairman, Sir Jack Drummond, F.R.S.; Secretary, Dr. L. J. Harris, Sc.D. (2) Microbiological Chemistry: Chairman, Dr. M. Stephenson, Sc.D., F.R.S.; Secretary, Dr. E. F. Gale, Sc.D. (3) Enzymes and Tissue Metabolism: Chairman, Professor R. A. Peters, F.R.S.; Secretary, Dr. D. M. Needham, Ph.D., F.R.S. (4) Proteins: Chairman, Dr. K. Bailey, Ph.D.; Secretary, Dr. R. R. Porter, Ph.D. (5) Clinical Biochemistry: Chairman, Professor E. J. King; Secretary, Dr. E. N. Allott. (6) Structure and Synthesis of Biologically Important Substances: Chairman, Professor A. R. Todd, F.R.S.; Secretary, Dr. B. Lythgoe, Ph.D. (7) Cytochemistry: Chairman, Professor J. N. Davidson; Secretary, Dr. Charity Weymouth, Ph.D. (8) Biological Pigments: Oxygen Carriers and Oxidizing Catalysts: Chairman, Professor D. Keilin, F.R.S.; Secretary, Dr. E. F. Hartree, Ph.D. (9) Hormones and Steroids: Chairman, Professor F. G. Young; Secretary, Dr. F. L. Warren, Ph.D. (10) Chemotherapy and Immunochemistry: Chairman, Sir Charles Harington, F.R.S.; Secretary, Dr. T. S. Work, Ph.D. (11) Plant Biochemistry: Chairman, Dr. C. S. Hanes, Ph.D., F.R.S.; Secretary, Professor T. A. Bennet-Clark. (12) Industrial Fermentations: Chairman, Mr. H. J. Bunker, M.A.; Secretary, Dr. P. W. Brian, Ph.D.

SOCIETIES AND LECTURES

Monday

EDINBURGH UNIVERSITY.—At Physiology Lecture Theatre, University New Buildings, Teviot Place, Edinburgh, June 13, 5 p.m., *"The Microscope: Origin and Evolution,"* by Dr. Douglas Guthrie.

LONDON: UNIVERSITY COLLEGE.—At Physiology Theatre, Gower Street, W.C., June 13, 4.45 p.m., *"Selective Toxicity with Special Reference to Chemotherapy,"* by Professor Adrien Albert.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—June 13, 8.30 p.m., Films: *"The History of the Cinema Film in Medicine"*; *"Angina Pectoris"*; and *"Removal of Foreign Bodies from the Eye."*

Tuesday

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., June 14, (1) 11 a.m., *"Gonorrhoea in the Female,"* by Dr. W. N. Mascall; (2) 5 p.m., *"New Growths of the Bladder (Benign),"* by Mr. C. H. Mills.

LONDON: UNIVERSITY COLLEGE.—At Physiology Theatre, Gower Street, W.C., June 14, 5.15 p.m., *"Muscular Contraction,"* by Professor A. V. Hill.

Wednesday

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., June 15, (1) 11 a.m., *"Vulvo-vaginitis in Children,"* by Dr. W. N. Mascall; (2) 5 p.m., *"New Growths of the Bladder (Malignant),"* by Mr. C. H. Mills.

NATIONAL HEART HOSPITAL: ROYAL SOCIETY OF MEDICINE.—At 1, Wimpole Street, W., June 15, 5 p.m., *"Withering,"* St. Cyres Lecture by Professor K. D. Wilkinson.

PHYSICAL SOCIETY: COLOUR GROUP.—At Institute of Ophthalmology, Judd Street, London, W.C., June 15, 4 p.m., 46th Science Meeting. *"The History of Artists' Pigments,"* by Dr. H. J. Plenderleith. Followed by discussion.

WEST LONDON HOSPITAL MEDICAL SCHOOL.—At Medical Society of London, 11, Chandos Street, W., June 15, 8.30 p.m., *"Surgical Treatment of Congenital Pulmonary Stenosis,"* Second Alexander Simpson-Smith Memorial Lecture by Mr. R. C. Brock.

WRIGHT-FLEMING INSTITUTE OF MICROBIOLOGY, St. Mary's Hospital Medical School, Paddington, W.—June 15, 5.30 p.m., *"Treatment of Bronchial Asthma,"* by Dr. Leon Unger (Chicago).

Thursday

DREADNOUGHT SEAMEN'S HOSPITAL, Greenwich, London, S.E.—June 16, 3 p.m., demonstration by Mr. D. M. Cooper.

HARVEIAN SOCIETY OF LONDON.—At Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C., June 16, 7.15 for 7.30 p.m., Buckston Browne-Gray Hill Annual Dinner.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., June 16, (1) 11 a.m., *"Systemic Gonorrhoea,"* by Dr. A. H. Harkness; (2) 5 p.m., *"Congenital Defects of the Testicle and Epididymis,"* by Mr. Harland Rees.

LONDON: UNIVERSITY COLLEGE.—At Physiology Theatre, Gower Street, W.C., June 16, 4.45 p.m., *"Some Aspects of Nitrogen Metabolism in the Mammal,"* by Dr. J. S. Bach.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 26, Portland Place, London, W.—June 16, 7.30 p.m., Annual general meeting, induction of new president, Professor H. E. Shortt, and presentation of Chalmers Gold Medal for 1949; film, *"Chagas' Disease,"* shown by Dr. R. V. Talice (Montevideo).

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, London, S.W.—June 16, 4.30 p.m., *"Neurology,"* lecture-demonstration by Dr. A. Feiling.

Friday

BIOCHEMICAL SOCIETY.—At Department of Chemistry, The University, Nottingham, June 17, 2 p.m., 277th meeting.

MIDDLESEX COUNTY MEDICAL SOCIETY.—At Central Middlesex Hospital, Park Royal London, N.W., June 17, 3 p.m.

Saturday

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.—At Queen Mary's Hospital, Carshalton, Surrey, June 18, 3 p.m., clinical meeting.

APPOINTMENTS

LODER, R. E., M.B., B.Ch., D.A., Specialist Anaesthetist, Peterborough Area, East Anglian Regional Hospital Board.

SALFIELD, DEREK J., M.D., Assistant Psychiatrist, Crichton Royal Mental Hospital, Dumfries.

SCHROEDER, BERNARD, M.B., Ch.B., D.P.H., Assistant County Medical Officer, North Riding of Yorkshire County Council, Medical Officer of Health, Whitby Urban District and Whitby Rural District.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Allen.—On May 23, 1949, in London, to Judy (née Collins), wife of Richard A. Allen, M.B., B.S., a son.

Jackson.—On June 5, 1949, at Oxford, to Barbara (née Bonsey), wife of Dr. C. R. S. Jackson, a son.

Keppich.—On May 31, 1949, at Bristol, to Enid, wife of Dr. Peter H. Keppich, a son—Mark Arnold.

Lauckner.—On May 23, 1949, at East London, South Africa, to Dr. Helena (née Taylor), wife of Dr. J. R. Lauckner, Lovedale, C.P., South Africa, a son.

Marien.—On May 28, 1949, at Thorpe Coombe Hospital, to Joan, wife of Dr. E. A. W. Marien, a daughter—Angela Isabel.

Messer.—On May 27, 1949, to Olive (née Dawson), wife of Basil Messer, M.B., B.S., 1, Undercliffe Street, Bradford, a son.

Rayner.—On May 28, 1949, at Queen Elizabeth Hospital, Birmingham, to Dr. Mary M. Rayner (née Dale) and Captain C. Stephen Rayner, Royal Signals, a daughter—Juliet Mary, a sister for Christopher.

Roberts.—On May 25, 1949, at St. Chad's Hospital, Birmingham, to Margaret (née Holloway), wife of Dr. Keith D. Roberts, a daughter—Diane Marguerite.

Thornley.—On June 1, 1949, at Manchester, to the wife of Mr. Roland Thornley, F.R.C.S.Ed., a son.

Whitehouse.—On May 26, 1949, at Queen Mary's Maternity Home, Hampstead, to Joan L. (née Tully), wife of Dr. Dennis Whitehouse, a son—Peter John.

DEATHS

Fletcher.—On May 28, 1949, at "Beechwood," Workington, Isaac Fletcher, M.B., C.M., D.P.H., J.P., in his 86th year.

Fox.—On June 1, 1949, Campbell Tilbury Fox, M.R.C.S., L.R.C.P., of "St. Margaret's," The Avenue, Littlestone, Kent, and late of Ashford, Kent, aged 77.

Frost.—On June 1, 1949, at 3, Parkside Road, Reading, Augustine Thomas Frost, O.B.E., M.B., B.Ch., Lieutenant-Colonel, R.A.M.C. (ret.), aged 71.

Grayling.—On May 31, 1949, Arthur Grayling, M.B., late of Forest Hill, London, S.E., aged 91 years.

Henderson.—On June 1, 1949, John Henderson, M.D., F.R.F.P.S., Professor of Medicine in St. Mungo's College, Glasgow, from 1913 to 1947, of 6, Newton Place, Glasgow.

McAllen.—On May 31, 1949, at "The Thatched Cottage," Llanwern, Monmouthshire, Thomas John McAllen, M.B., B.Ch., of Pontypool.

MacLeod.—On April 30, 1949, at Sydney, New South Wales, Charles Gordon MacLeod, M.D., F.R.A.C.S.

Rosenbloom.—Suddenly, on June 1, 1949, at Western Infirmary, Glasgow, Alfred Rosenbloom, M.B., Ch.B., D.T.M., Colonel, I.M.S. (ret.), aged 46, beloved husband of Leah Rosenbloom, M.B., Ch.B.

Shannon.—On May 28, 1949, at 253, Green Lanes, Palmer's Green, London, N., Frederick Shannon, M.B., Ch.B., aged 64.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Bee-stings

Q.—*What are the current views on bee-stings? What is known about the nature of the venom; single and multiple stings; anaphylaxis or hypersensitivity, and any other possible complications? What is the best treatment?*

A.—The poison-gland system of a bee consists of a small alkaline and a larger acid gland. Bee venom is a complex substance which, it is suggested, contains histamine and a combination of lecithin with basic radicals somewhat resembling apotoxins and cantharidin. It does not contain formic acid. A single sting as a rule causes only a slight local reaction, but if it occurs on the tongue or fauces it may cause oedema of the glottis. Some people, usually as the result of repeated stinging, become allergic to the venom, and this will result in a large painful swelling at the site of the sting with or without a generalized urticaria; in highly sensitive subjects generalized angioneurotic oedema, severe dyspnoea, coma, and death may occur. Death may also occur in non-sensitized subjects from extensive multiple stinging. The sting should be gently removed. Local therapy consists in the application of alkali soap, weak ammonia, sodium bicarbonate solution, methylene blue, alcohol, calamine, or an antihistamine or analgesic ointment. For the milder urticarial reactions an antihistamine drug or ephedrine, or a combination of the two, should be given. For the severe allergic reactions, and for the collapse due to multiple stinging, 5 to 10 minims (0.3 to 0.6 ml.) of adrenaline should be injected and repeated as necessary.

Oestrogens at the Menopause

Q.—*Will hormone therapy preserve the secondary sexual characteristics of women at and after the menopause and prevent loss of youthful form, atrophy of the breasts, etc.? Are there any dangers (for example, of carcinogenesis) in prolonged administration of sex hormones?*

A.—Oestrogens preserve secondary sex characters to a limited extent in women. They prevent atrophy of the breasts and of the tissues of the genital tract, and in some women at least they increase libido, which tends to wane with advancing years. Their effect on the texture of skin and hair and on bodily figure is, however, less definite, and they do not significantly modify the general process of ageing. The danger of prolonged administration of oestrogens is that they stimulate the uterus to undergo hyperplasia and cause irregular and heavy uterine haemorrhage; they may also stimulate the epithelium of the breasts to unnatural activity. Although oestrogens have been shown to be carcinogenetic under certain circumstances in animals, they have never been proved to cause cancer in the human being, and the risk of this was probably exaggerated in the past. They are nevertheless powerful stimulants of the epithelium of the female genital tract, and their prolonged administration might prove an activating factor in the presence of a precancerous lesion or of an inherent susceptibility to malignant disease.

Loss of Ultra-violet Transparency

Q.—*Can you provide me with any data concerning the rate of loss of transparency to ultra-violet rays in the quartz of a mercury arc lamp?*

A.—The conversion of quartz into its isomers tridymite and cristobalite, which are opaque to ultra-violet irradiation, starts as soon as the burner is put into use. This deterioration occurs most rapidly during the first 500 hours of use, and then takes place more slowly. In the older models after 1,000 hours of use the intensity of radiation would be about one-half of the original, but in the latest electronic-discharge types only about 20% of the irradiation would be lost in this time. Most burners are fitted with a rheostat by which the intensity of the arc can be increased as the burner grows old, thus maintaining its output. The questioner is referred to Morris's *Medical Electricity* (Churchill, 1946, p. 262) and Kovacs's *Electrotherapy and Light Therapy* (Lea and Febiger, Philadelphia, 1945, p. 352).

Salt Intake and Peptic Ulcer

Q.—*Has any research been done on the excessive intake of sodium chloride as a factor in the causation of peptic ulcer? I recently came across four cases of this complaint in which the patients were said to have an undue partiality for salt.*

A.—From time to time work has been done on the possible relationship between salt intake and peptic ulcer. Apart from the irritant effect of large doses of salt frequently administered—a factor which seldom arises—the conclusion is that sodium chloride plays no part in the aetiology of peptic ulcer.

Extrasystoles

Q.—*Are attacks of extrasystoles always due to sympathetic overaction? I have in mind a man of 42 who suffers from attacks of continued extrasystoles, sometimes passing on to auricular fibrillation. There is no history of rheumatism or venereal disease, and the heart is normal between attacks. These occur about twice weekly and last from two to three hours; they are induced by changes of temperature and also by pain, and are aggravated by cigarette-smoking.*

A.—The description given is typical of frequent prolonged bouts of extrasystoles in a person with an otherwise normal cardiovascular system. In some such cases the only means of differentiating these attacks from auricular fibrillation is by an electrocardiogram taken during the phase of irregularity. These bouts are usually accentuated by infection, tobacco-smoking, fatigue, pain, etc. It is not necessarily due to overaction of the sympathetic nervous system, but is a functional condition of the myocardium, and, indeed, attacks in some people may be induced by overaction of the vagus. The prognosis is good and such patients may live to a ripe old age.

The following treatment may be tried in varying combinations: quinidine 3 gr. (0.2 g.) three times a day, alone or combined with strychnine; potassium salts, such as potassium acetate 30 to 60 gr. (2 to 4 g.) four times a day, and potassium bromide 10 gr. (0.65 g.) three times a day; phenobarbitone ½ gr. (32 mg.) three times a day. The patient should be reassured and told that the attacks are of no importance and that they may be ignored. If, however, attacks of this kind have been proved by electrocardiography to be due to auricular fibrillation the condition will probably become established unless preventable by quinidine, and the outlook is correspondingly more serious. In this case digitalis (which may increase the incidence of extrasystoles) will have to be used for persistent fibrillation.

Precipitating or Delaying Menstruation

Q.—*Can anything be done with safety to (a) precipitate, or (b) delay the onset of, a menstrual period? A woman who is to be married on June 12 had her last period on May 19; her cycle is irregular, with intervals of about three weeks.*

A.—Injection of neostigmine, 1 mg. daily on three successive days, sometimes precipitates the onset of a period which is overdue, but it is not likely to bring one on prematurely. In the case in question the patient is already in the luteal phase of the cycle, so that the best hope of deferring menstruation is to give daily intramuscular injections of 10 mg. of progesterone, starting not less than three days before the expected onset of the next period—that is, about June 3. The injections will have to be continued so long as postponement of menstruation is desired, and the flow can be expected within 48 hours of suspension of treatment. Oral therapy with ethisterone is not usually powerful enough to defer a period, and, since continuation of injections is likely to be impracticable, there is much to be said for leaving well alone. This is particularly true in this case, because (*a*) if the patient's present cycle is a three-weekly one

the next period should begin about June 6 and should be finished, or nearly finished, by the time of the wedding; (*b*) the irregularity of menstruation makes it difficult to time any treatment designed to change the time of onset; (*c*) the excitement of marriage and preparation for it may well precipitate or postpone menstruation. Even if the dates of marriage and menstruation clash, it should be no great tragedy. Deferment of coitus for two or three days, when the initial emotional excitement of marriage has passed, may favour rather than hinder the early establishment of happy sexual relations.

Resistant Skin Condition

Q.—*Could you suggest diagnosis and treatment for an atrophic condition of the skin of the hands in a man aged 38? He is inclined to be over-conscientious in his work, which is of a sedentary nature, but has no definite neurotic traits. The skin is dry, cracked, and flaking, and the affection is limited to the back of the fingers and the web area between the fingers. The condition varies much in severity; exacerbations are heralded by the appearance of small white nodules deep in the surface of the skin. Two independent dermatologists have suggested a functional element, with no definite diagnosis, and prescribed phenobarbitone, but this has been ineffective.*

A.—The use of the term "atrophic" is probably inaccurate. It does not tally with the "white nodules"—by which is presumably meant the deep vesicles of pompholyx—or cracking and flaking of the webs between the fingers. It is unlikely that two dermatologists would suggest a functional disturbance for an affection that was atrophic. With such loose terminology it is difficult to suggest a diagnosis, but the condition is probably a constitutional eczema. The question of adjustment to environmental conditions at home and work may need further attention. Fractional doses of *x* rays and bandaging the fingers independently at night, with Lassar's paste as a local application, are suggested. Soap and water and unnecessary cleaning of the hands should be avoided, liquid paraffin being used for cleansing purposes. It is important to be certain that there are no contacts outside work which may be causing trouble, as gardening, photography, or other hobbies and occupations.

Coronary Occlusion and Local Heat Therapy

Q.—*A patient aged 50 had a coronary occlusion eleven months ago; he has recovered and is now back at office work. He suffers from an old lumbago and I would like to try infra-red rays—is there any contraindication?*

A.—If the patient is capable of a full day's work at his office his former coronary occlusion is no contraindication to infra-red ray treatment for his lumbago. His heart should be able to stand the increased circulation of blood induced by local application of heat to a small area, with the resulting vasodilatation and lowered peripheral resistance.

Sensitivity to Sulphonamides

Q.—*Is it possible to desensitize an individual who is hypersensitive to sulphonamides? A man aged 74 took prontosil for a cold in 1934; six months later he had prontosil again, but after taking two tablets in 48 hours swelling of the lips and tongue and soreness of the mouth developed. Six months later he tried again and with similar results. A fortnight ago, after incision of the gum for extraction of an unerupted tooth, a tablet of penicillin was inserted. Some degree of the same symptoms ensued, and it was found that 1 gr. (65 mg.) of sulphapyridine was combined with the penicillin. Can anything be done to enable him to take sulphonamide compounds?*

A.—Stomatitis and glossitis sometimes accompany the "drug fever" type of reaction to sulphonamide drugs. The occurrence of these symptoms as the sole evidence of hypersensitivity is uncommon, though it has been reported. It seems probable that glossitis of this type is not due to hypersensitivity in the narrow sense of the word; it has been suggested that it is related to an alteration in the bacterial flora of the mouth or to a conditioned vitamin deficiency. Desensitization to sulphonamides has been carried out, but the process is arduous for the patient and would certainly be unjustifiable at the age of 74 years. Resort must be made to penicillin when infections need control.

NOTES AND COMMENTS

Spread of Tuberculosis by Books.—Dr. R. HARDY (Kingston-upon-Hull) writes: Dr. T. Peirson (May 7, p. 832) is obviously dissatisfied with the answer given in "Any Questions?" (April 2, p. 601) to a correspondent's question on this subject. I want to refer him to the *Lancet* (1943, **1**, 81), where editorial comment was made and a short review of the then available literature was given, both with reference to the tubercle bacillus in books. To recapitulate briefly, C. R. Smith (*Amer. Rev. Tuberc.*, 1942, **46**, 549) specially studied the transmission of infection from books, papers, etc., and found that the bacillus was viable from 2 up to 15 weeks in the dark at room temperature, but only for a few days in room light. Printer's ink did not affect survival rates of the bacillus, which lived as long on printed as on plain paper. In paper made from wood pulp the *p*H value of 5–6 was below the optimum for cultivation of the tubercle bacillus; in other words the medium was too acid for growth and propagation. "Book quarantine"—storage of books for four weeks on a dry book-shelf—was advocated as being effective in the disinfection of naturally contaminated books. Smith's conclusion was that the risks in lending-libraries were not very great. McCartney (*Lancet*, 1925, **2**, 212) had already expressed a similar view, regarding books as insignificant transmitters of infection relatively to other fomites. Well-worn books, especially when read by children or ill, handled by infants, are potentially infective not only in regard to tubercle but to a variety of other infections. They should be (and invariably are) weeded out continually from public and other lending-libraries. The problem is less important by far as a public-health problem than the potential transmission of infections from crockery, cutlery, glasses, etc., used communally in cafés and public houses, and should be viewed in that light. Greater risk of infection by tubercle (and "droplet" infection at that) may be incurred during a 3-hour cinema or theatre show on almost any winter evening than by perusal of the most dilapidated book from the library shelves. And in the case of books "terminal" disinfection of hands can at least be done by the more fastidious of bibliophiles.

Vaccine Lymph.—Dr. DAVID SACKS (London, W.9) writes: I was surprised to read (May 7, p. 818) of the methods of expulsion of vaccine lymph from capillary tubes. The methods suggested, both by the Ministry of Health and Dr. O. H. Bowen, seem to be rather cumbersome. My method consists of snapping off both ends of the capillary tube with a pair of scissors which have been passed through a flame, applying one open end to the patient's linear scratch and the other end to my lips. A slight expiration and presto! the lymph is expelled. I cannot see the point of using sterilized teats, hypodermic syringes, etc., for this very simple procedure. Is sterility desirable for the patient's or the physician's safety? My father has been practising this method for 30 or more years, and neither he nor I have had anything but excellent results. A complete vaccination, including the linear scratch, the lymph expulsion, and the application of a piece of strapping over the area takes two minutes by this method.

Absorption of Mercury.—Dr. MARIE C. STOPES (Dorking) writes: Concerning your reply to the question about the absorption of mercury by women using contraceptives containing it ("Any Questions?" May 14, p. 879), may I say that very many years ago when I first started my work I found that women were dangerously ill, some even died, because of using compounds of mercury as contraceptives? I therefore profoundly deplore the recent recurrence of a much advertised commercial product containing mercury, for, although it may not injure all women, it certainly injures some. Your last sentence, saying that the risk would be increased "in cases in which the remains of the contraceptive were not removed by douching," also grieves me, for douching after coitus is a deplorable habit with bad psychological as well as physiological results, and we find it best, after over 25 years' experience, to advise against all douching. It is never necessary if the right bland suppository is used.

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